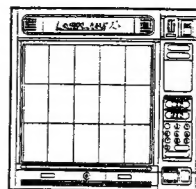
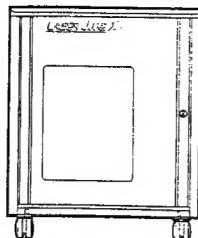


Service Manual



PIONEER®
The future of sound and vision.



ORDER NO.
ARP1610

SELECTION COMMANDER

LJ-V20

LJ-V20-K

VIDEO DISC AUTOCHANGER

LC-V20

LC-V20-K

- Selection commander LJ-V20 or LJ-V20-K and video disc autochanger LC-V20 or LC-V20-K operate in conjunction.
One video disc autochanger LC-V20 or LC-V20-K will handle up to three selection commanders LJ-V20 or LJ-V20-K.

MODELS LC-V20, LJ-V20, LC-V20-K AND LJ-V20-K HAVE TWO VERSIONS:

Type	Applicable model				Power requirement	Export destination
	LC-V20	LJ-V20	LC-V20-K	LJ-V20-K		
HEM	○	—	○	—	AC220V,240V (switchable)	European continent
AEM	—	○	—	○	AC22V only	European continent

- This service manual is applicable to the HEM and AEM types.
- For the LC-V20-K type, refer to page 138.
- For the LJ-V20-K type, refer to page 137.
- The LC-V20-K is the same as the LC-V20 except for the color.
- The LJ-V20-K is the same as the LJ-V20 except for the color.
- Ce manuel pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.

PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada

PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1, 2740 Beveren, Belgium

PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

© PIONEER ELECTRONIC CORPORATION 1988

IFI JULY.1988 Printed in Japan

CONTENTS

1. SAFETY INFORMATION	2	3.4 ELECTRICAL PARTS LIST	95
2. SELECTION COMMANDER/LJ-V20	4	3.5 ADJUSTMENT	101
2.1 PARTS LOCATION	4	3.5 RÉGLAGE	109
2.2 EXPLODED VIEWS AND PARTS LIST	6	3.5 AJUSTE	117
2.3 SCHEMATIC DIAGRAM	12	3.6 DISASSEMBLY	125
2.4 P.C. BOARDS PATTERN	15	3.7 SERVICE MODE	132
2.5 ELECTRICAL PARTS LIST	17	4. FOR LJ-V20-K/AEM TYPE	137
3. VIDEO DISC AUTOCHANGER/LC-V20	18	5. FOR LC-V20-K/HEM TYPE	138
3.1 PARTS LOCATION	18	6. SPECIFICATIONS	139
3.2 EXPLODED VIEWS AND PARTS LIST	21	7. PANEL FACILITIES	140
3.3 SCHEMATIC DIAGRAM AND P.C. BOARDS PATTERN	45		

1. SAFETY INFORMATION

ADVARSEL!

Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

Denne advarsel er angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anvisning. Batterierne må kun udskiftes med batterier af samme type og mærke.

WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below. The batteries must be replaced only by batteries of the same type and manufacture.

VAROITUS!

Litiumparistot. Räjähdyksvaara. Vaihdon saa suorittaa ainoastaan asiantunteva huoltoteknikko noudattamalla huolto-ohjeessa annettuja ohjeita.

Tämä varoitus sijaitsee laitteessa tai käyttöohjeessa. Noudata litiumparistoja vaihtaessasi alla olevaa huomautusta. Paristot on vaihdettava samantyyppisiin ja saman tehtaan valmistamiin paristoihin.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LAHETTAÄ NÄKYMATONTA, SILMILLE VAARALLISTA INFRAPUNA-SÄTEILYÄ. LAITTEEN SISÄLLÄ ON LASERDIODIN LAHEISYYDESSÄ KUVA 1. MUKAINEN VAROITUSMERKKI.



LASER
Kuva 1
Lasersäteilyn
varoitusmerkki

ADVERSE!

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VIKTIGT

APPARATEN INNEHÅLLER LASER AV HÖGRE KLASS AN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

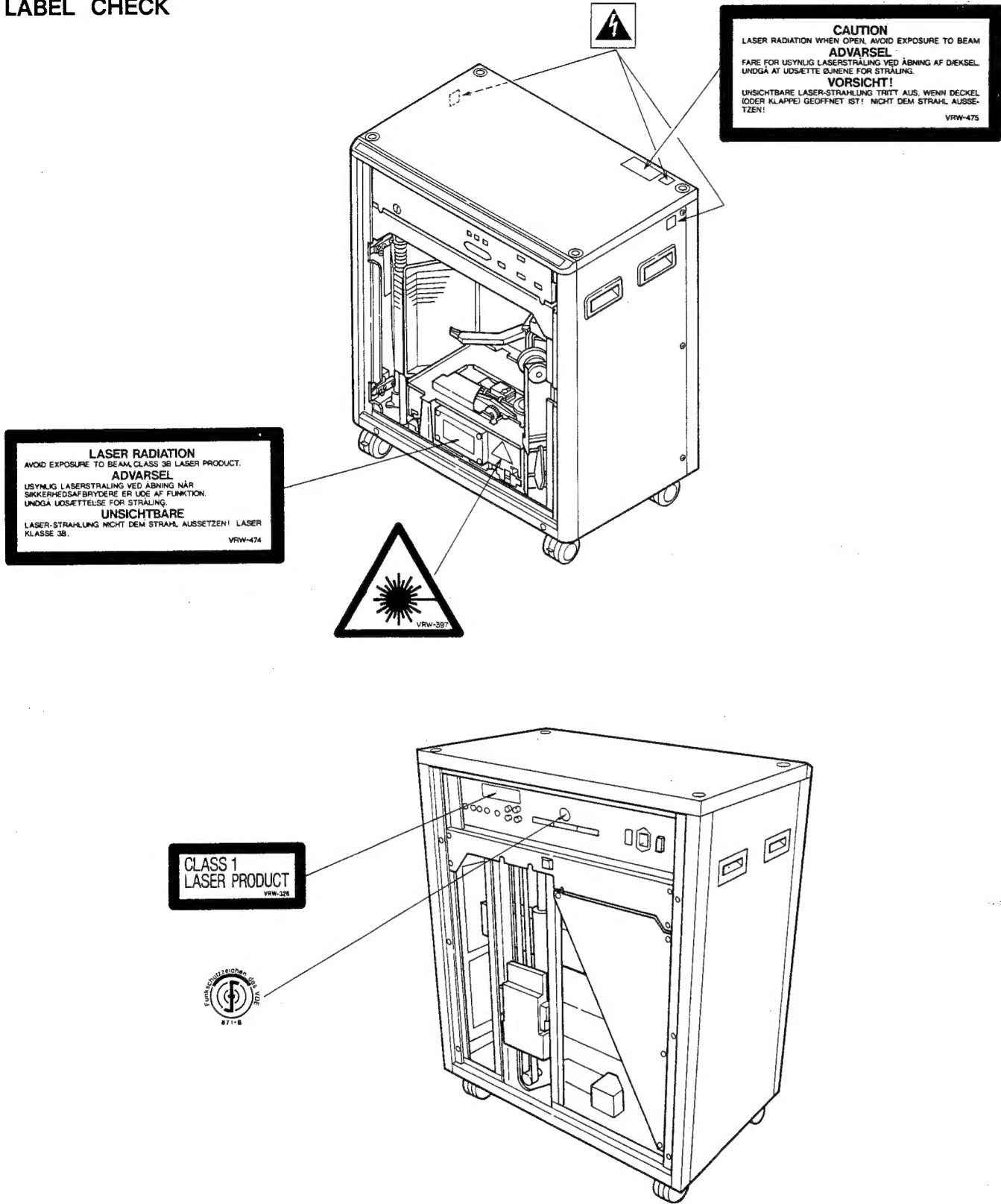


LASER
Picture 1
Warning sign for
laser radiation

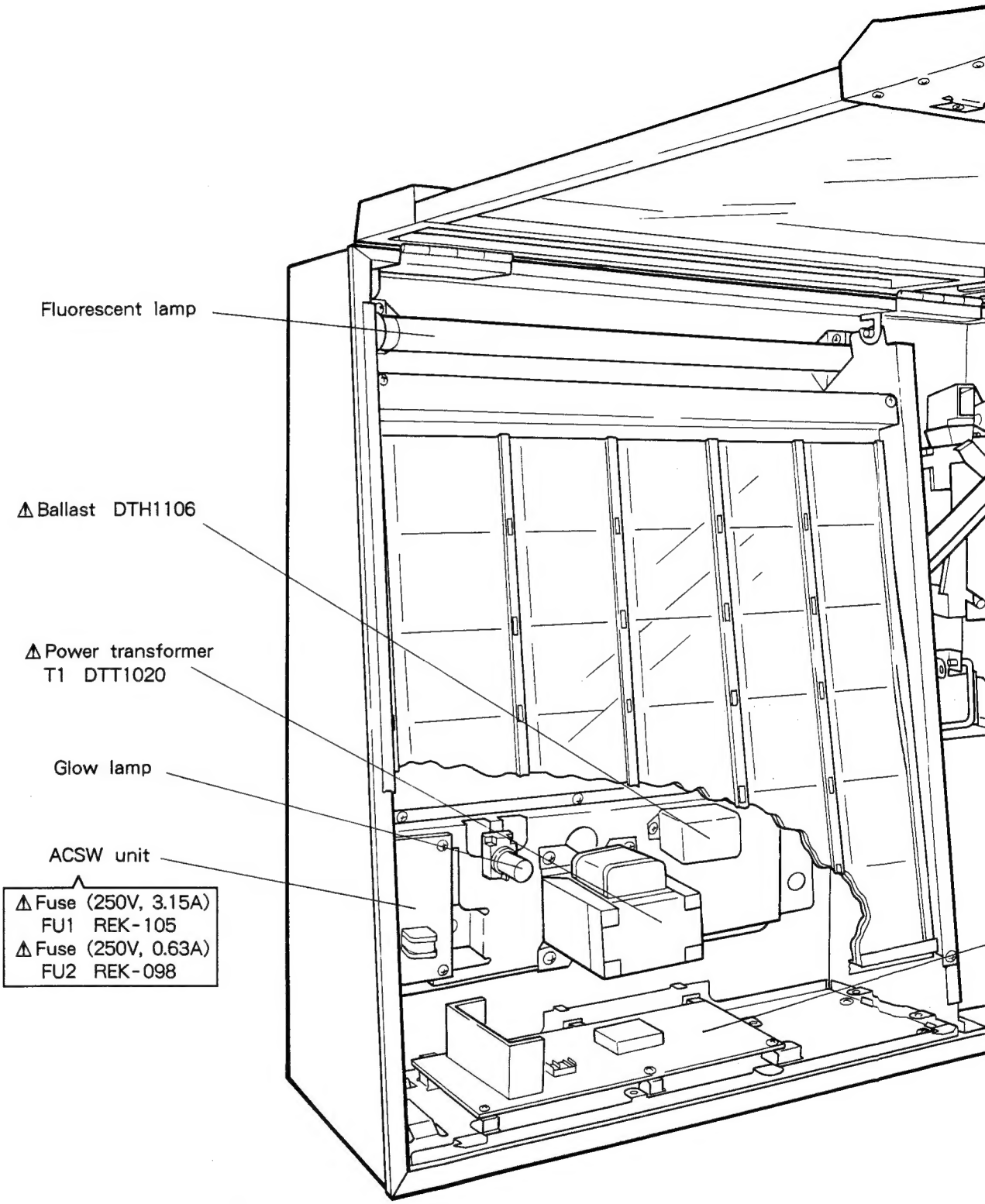
IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LABEL CHECK

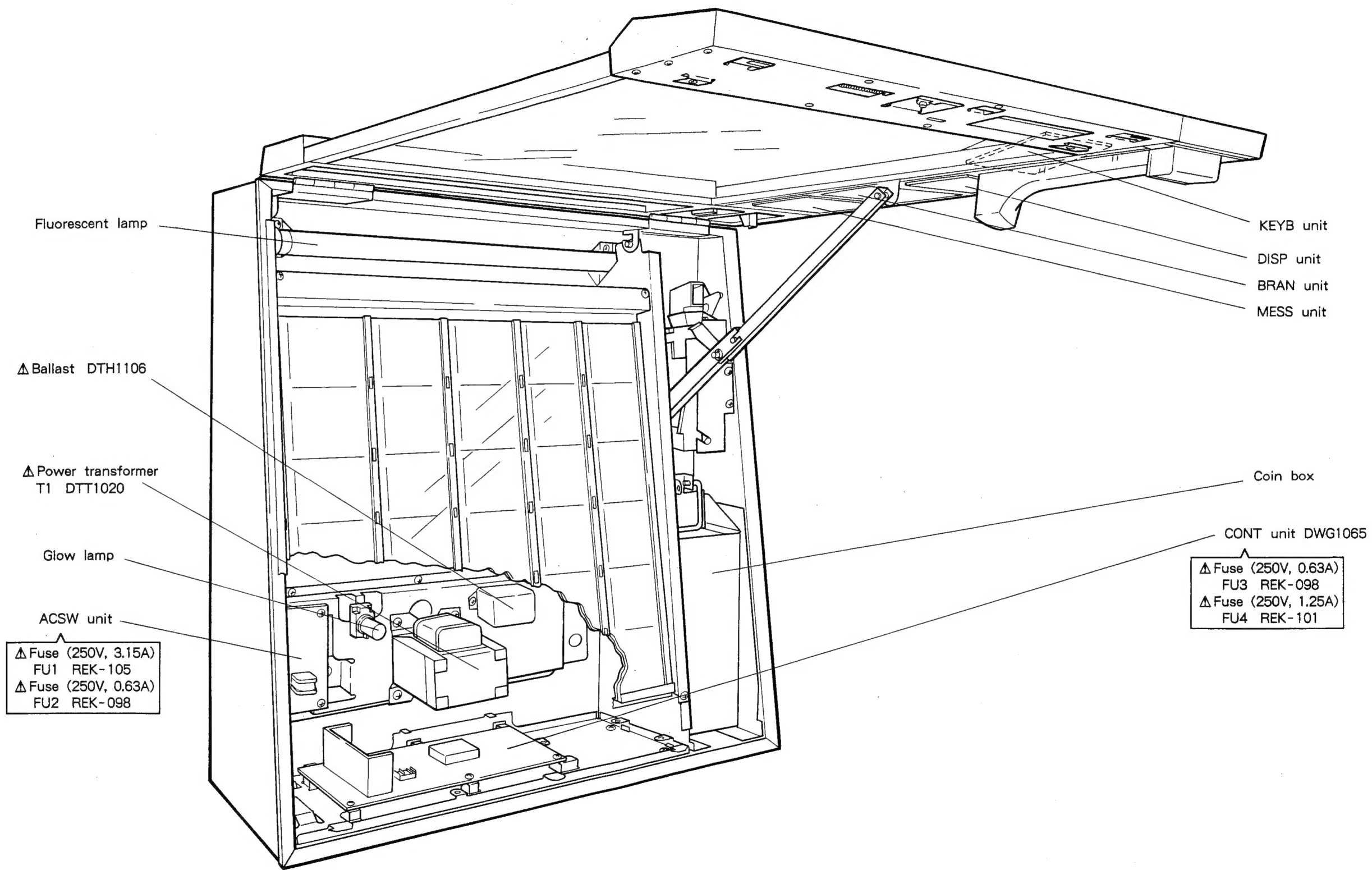


2. SELECTION COMMANDER/LJ – V20
2.1 PARTS LOCATION



2. SELECTION COMMANDER/LJ - V20
2.1 PARTS LOCATION

ON
VOID EXPOSURE TO BEAM
SEL
IS VED ÅBNING AF DEKSEL
STRÅLING
HT!
TRIT! AUS, WENN DECKEL
NICHT DEM STRAHL AUSGE-
VRW-475



2.2 EXPLODED VIEWS AND PARTS LIST

2.2.1 EXTERIOR

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

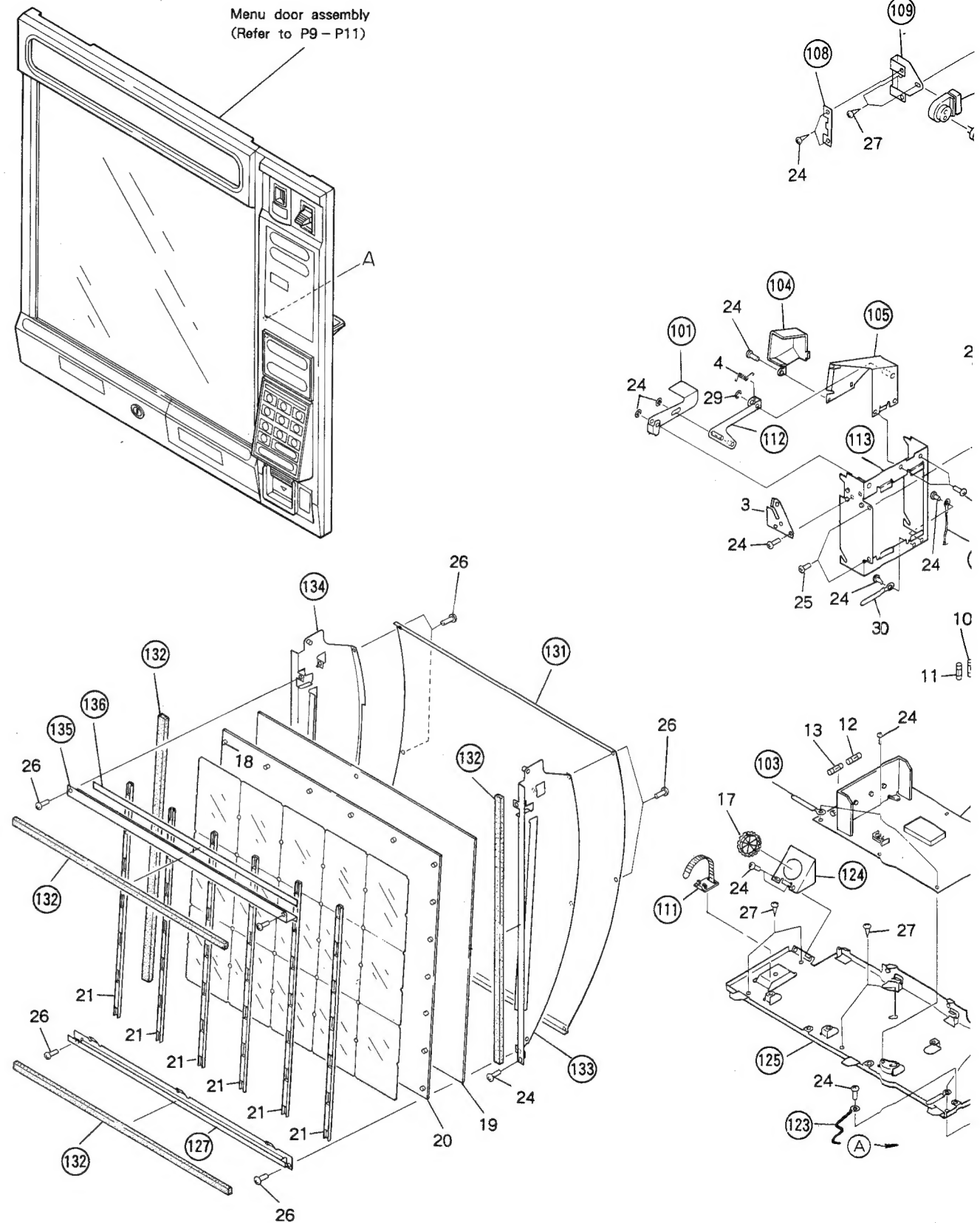
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1		• • • • •		106		Cord clamber
	2		• • • • •		107		CA holder A
	3	DBK1015	Acceptor plate spring		108		Socket hold plate
	4	DBH1037	CA spring		109		KS holder
	5	DKK1005	Fluorescent lamp socket L		110		Fluorescent lamp
	6	DKK1004	Fluorescent lamp socket R		111		Cord clamber
	7	DXB1069	Hinge		112		CH lever assembly A
	8	DKK1001	Glow lamp socket		113		CA holder C assembly
	9		• • • • •		114		• • • • •
Δ	10	REK-098	Fuse (630mA) (FU2)		115		Wood frame assembly
Δ	11	REK-105	Fuse (3.15A) (FU1)		116		RF holder
Δ	12	RED-098	Fuse (630mA) (FU3)		117		Stay A
Δ	13	REK-101	Fuse (1.25A) (FU4)		118		ACSW unit
Δ	14	DTT1020	Power transformer		119		Door stay A
Δ	15	DTH1106	Ballast		120		DS shaft B
◎	16	DWG1065	CONT unit		121		Door stay B
	17	DEC1120	Cord bushing		122		DS holder assembly
	18	DNK1226	Guide pin		123		Earth lag assembly
	19	DAN1003	MB glass		124		Cord holder
	20	DAH1178	Menu board		125		Stay B
	21	DNK1227	Menu presser		126		CB cushion
	22		• • • • •		127		MB clamber B
	23		• • • • •		128		Coin box assembly
	24	BBZ30P080FMC	Screw		129		CB holder
	25	BBZ40P080FMC	Screw		130		DS shaft A
	26	BBZ30P060FMC	Screw		131		Reflector
	27	DBA1007	Screw		132		Menu packing A
	28	PBZ30P120FMC	Screw		133		Reflector assembly R
	29	YE30FUC	E ring 3		134		Reflector assembly L
	30	RNH-184	Cord holder		135		MB clamber A
	101		CH lever B		136		Film
	102		• • • • •		137		Glow lamp
	103		Cord holder		138		Earth lag assembly
	104		Throw guide				
	105		HL holder assembly A				

A

B

C

D



1

2

3

4

5

6

A

A

B

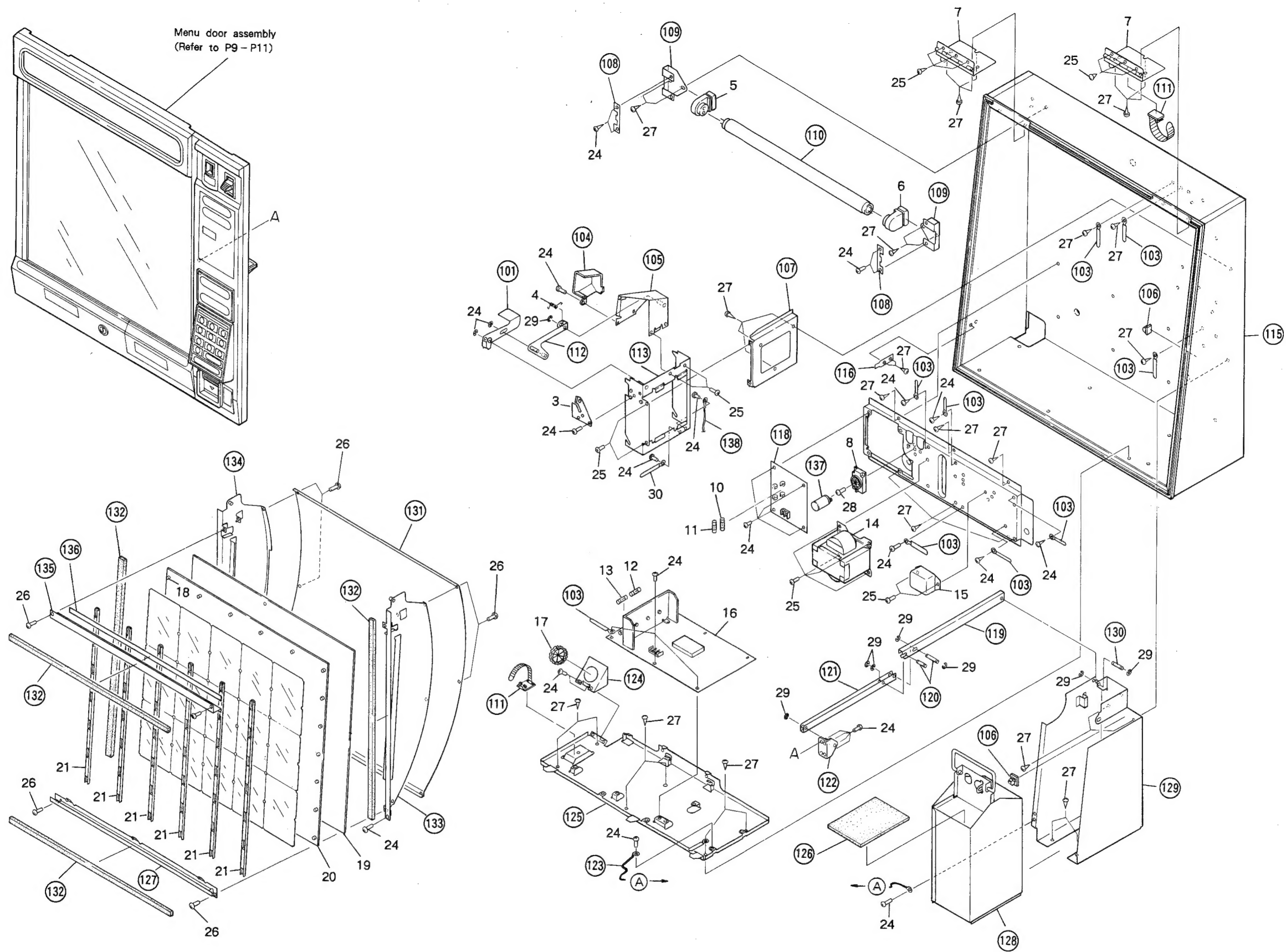
B

C

C

D

D

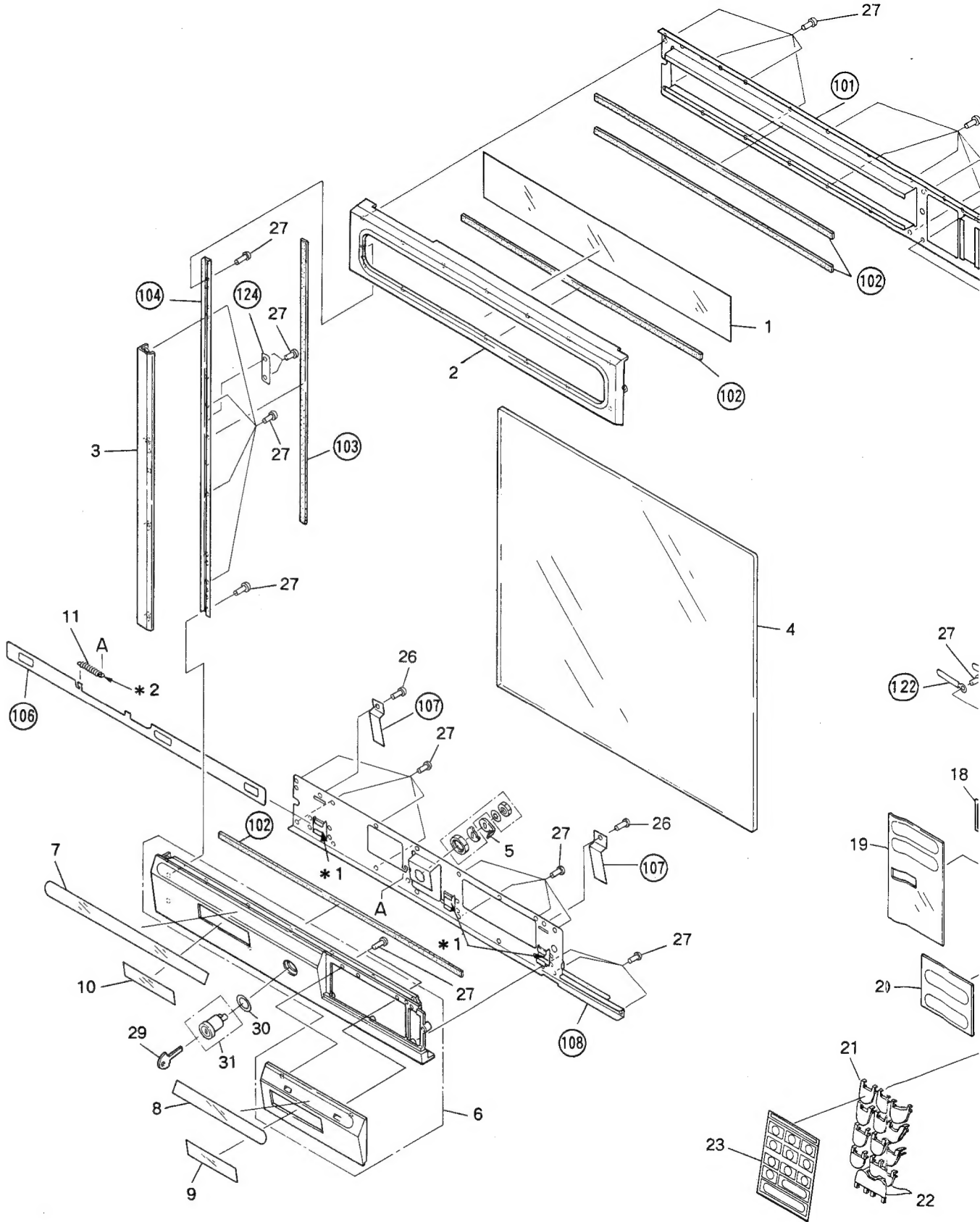


2.2.2 MENU DOOR ASSEMBLY

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	DAH1204	Sign board		101		Upper stay
	2	DNK1242	Electrical decoration panel		102		Glass packing A
	3	DNK1247	Side panel		103		Glass packing B
	4	DAN1004	Menu glass		104		MG holder
	5	DNH1126	Lock release board		105		. . . . .
	6	DXA1075	Key panel assembly		106		Lock plate
	7	DAH1210	Name plate A		107		Plate spring
	8	DAH1211	Name plate B		108		Under stay assembly
	9	DAH1194	Name plate C		109		NESS unit
	10	DAH1195	Name plate D		110		BRAN unit
	11	DBH1034	Lock spring		111		DISP unit
	12	DBH1038	Return lever spring		112		KEYB unit
	13	DAD1001	Return lever		113		Coin guide A
	14	DAH1208	Return lever sheet B		114		Coin guide C
	15	DNS1044	Coin throw (HE)		115		Coin guide B
	16	DNK1246	Operation panel		116		Return tray B
	17	DAH1229	Coin sheet		117		Return tray A
	18	DAH1207	Return lever sheet A		118		Earth lag assembly
	19	DXX1154	Indication plate E/S		119		. . . . .
	20	DAH1233	Indication plate B		120		Reinforcement plate
	21	DNK1236	Key knob A		121		Cord holder
	22	DNK1214	Key knob B		122		Cord holder
	23	DAH1230	Key sheet		123		Coin slit
	24	DNK1235	Return door		124		Glass presser plate
	25	DAH1186	Sheet				
	26	BBZ40P080FMC	Screw				
	27	BBZ30P080FMC	Screw				
	28	BMZ30P060FMC	Screw				
	29	DXX1152	Key				
	30	DNH1146	Washer				
	31	DXB1065	Key cylinder				
		BBZ30P120FMC	Screw				

* 1 : Apply the froil GB-TS-1 (Z51-016)
* 2 : The portion of indicate “* 2” are put by the
dia-bond # 1663 (ASCR-2663)



g A
g B

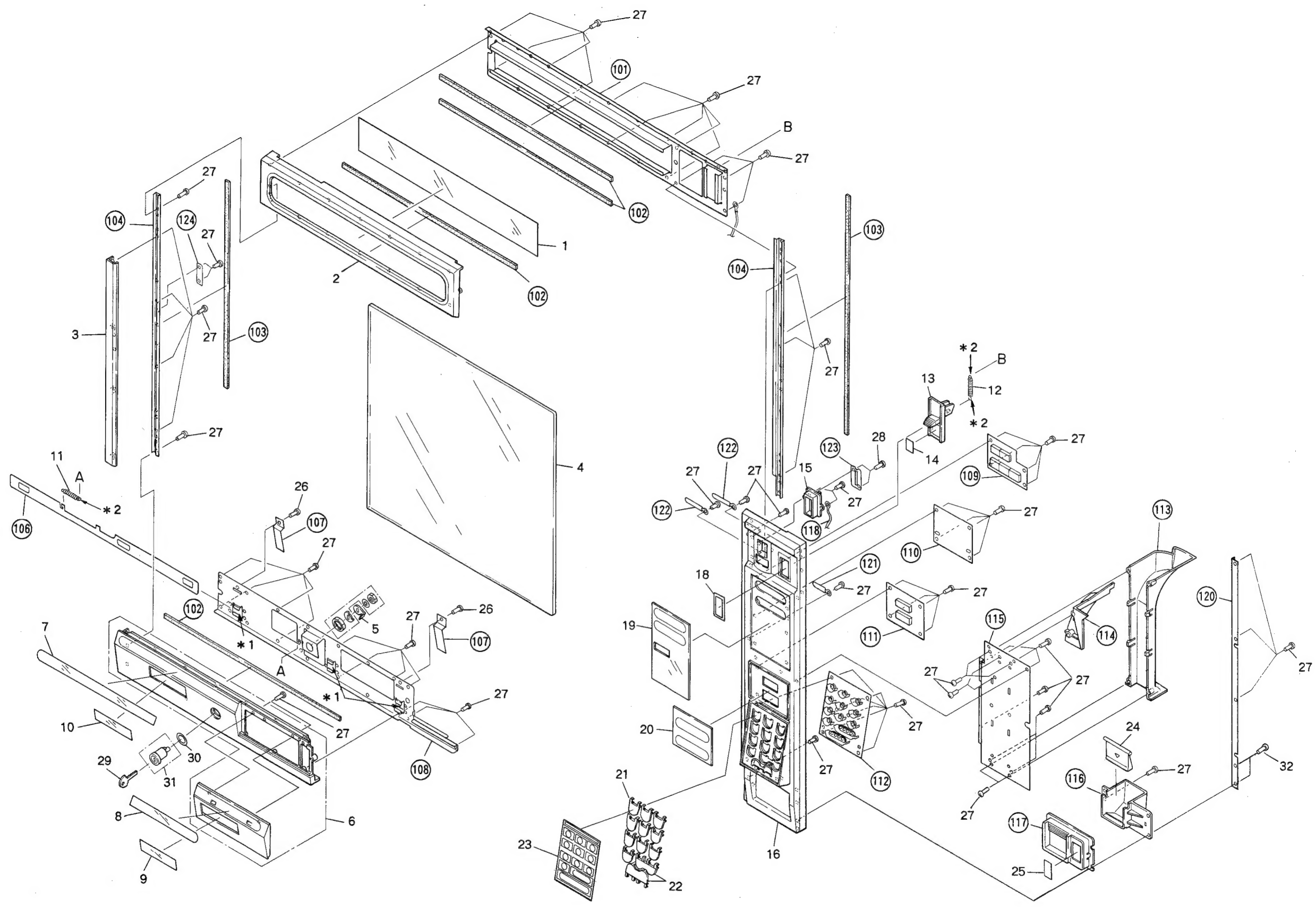
assembly

A
3

B
A
sembly
it plate

plate

by the



2.3 SCHEMATIC DIAGRAMS

A

1. RESISTORS:
Indicated in Ω , 1/4W, 1/6W and 1/8W, $\pm 5\%$ tolerance unless otherwise noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 10\%$, (M); $\pm 20\%$ tolerance.

2. CAPACITORS:
Indicated in capacity (μ F)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
V: Signal voltage at W+ W, 8 Ω output (1kHz).
V: DC voltage (V) at no input signal.
Value in () is DC voltage at rated power.
mA: DC current at no input signal.
mV: Signal voltage at FM 1kHz ± 75 Hz DEV.

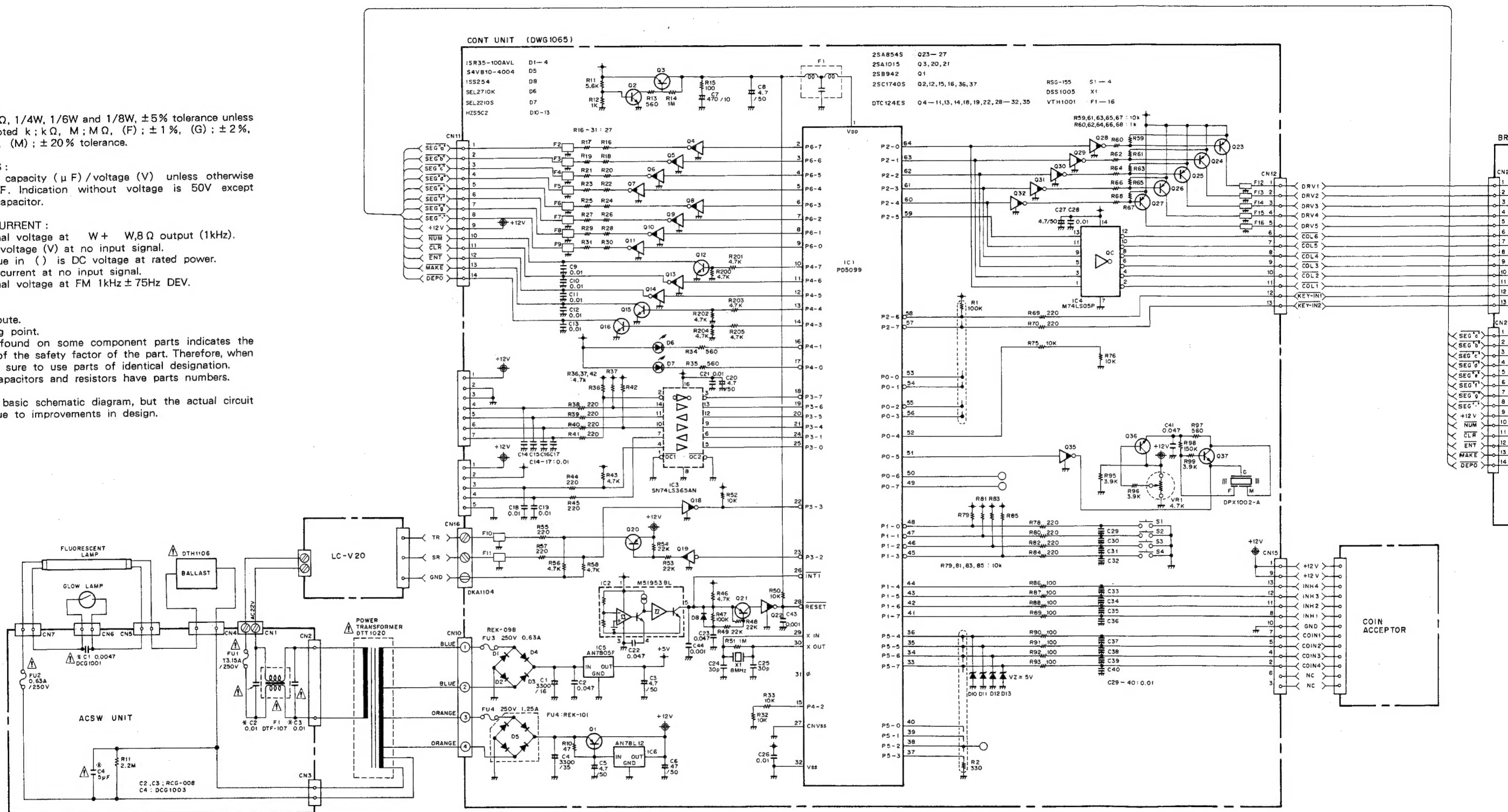
4. OTHERS:
→: Signal route.
⊗: Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

B

C

D



4

5

6

7

8

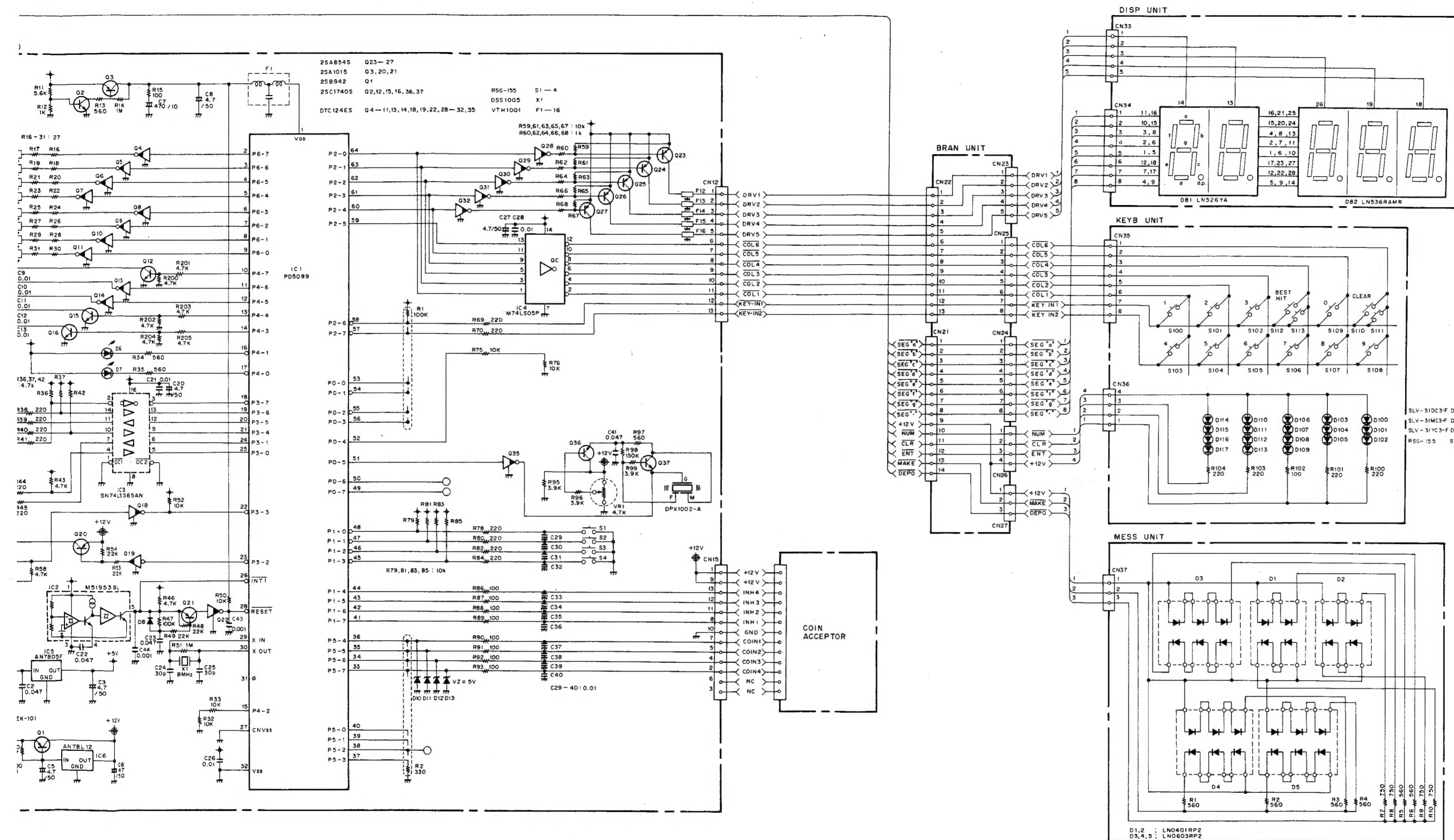
9

A

B

C

D

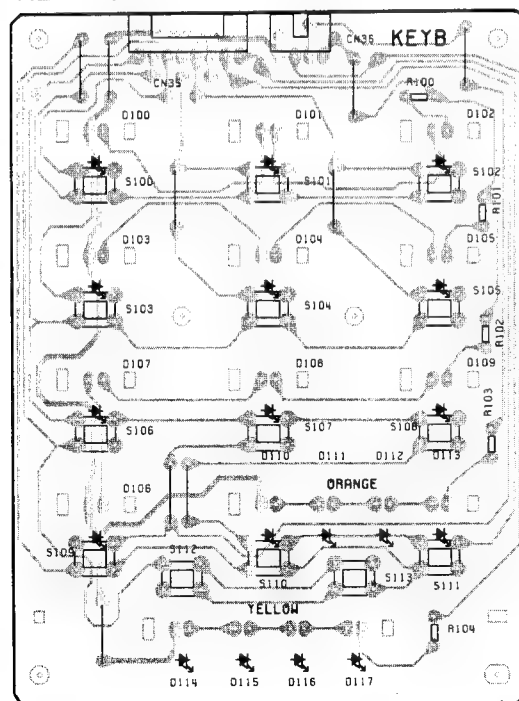


2.4 P.C. BOARD PATTERNS

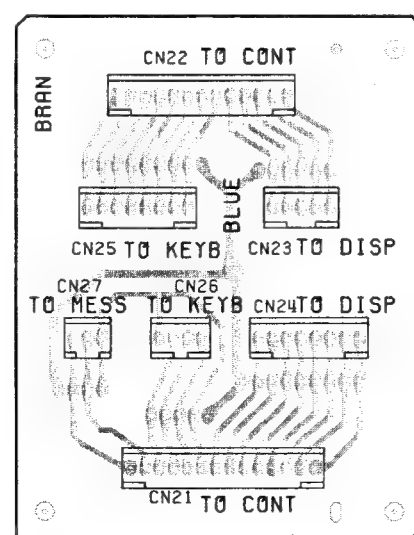
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Myler capacitor
		Diode			Styro capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
		Coil			Resistor
		Transformer			Resonator
		Filter			Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

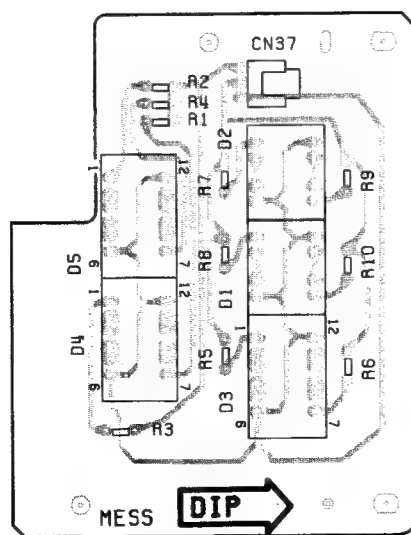
KEYB UNIT



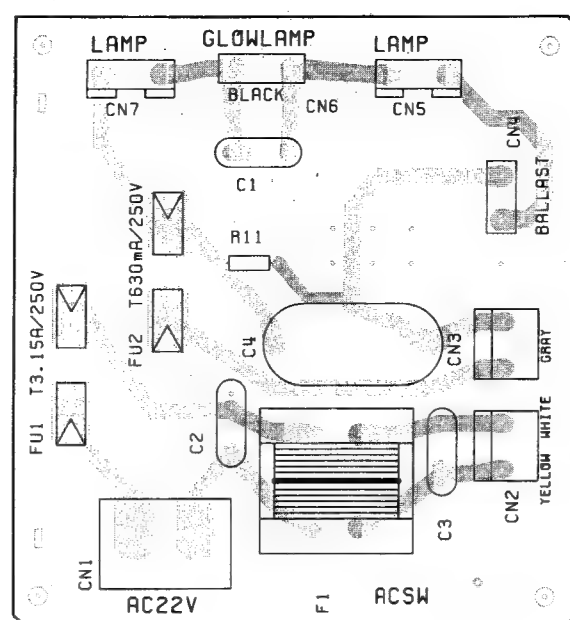
BRAN UNIT



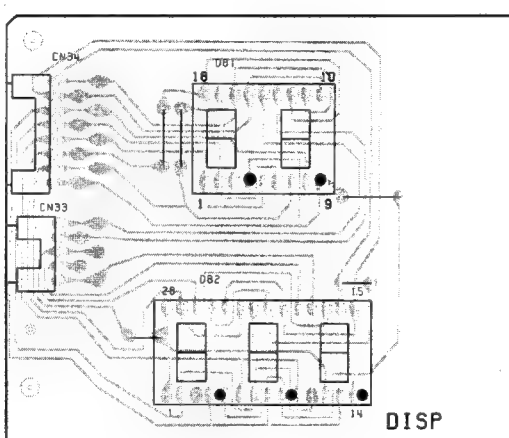
MESS UNIT



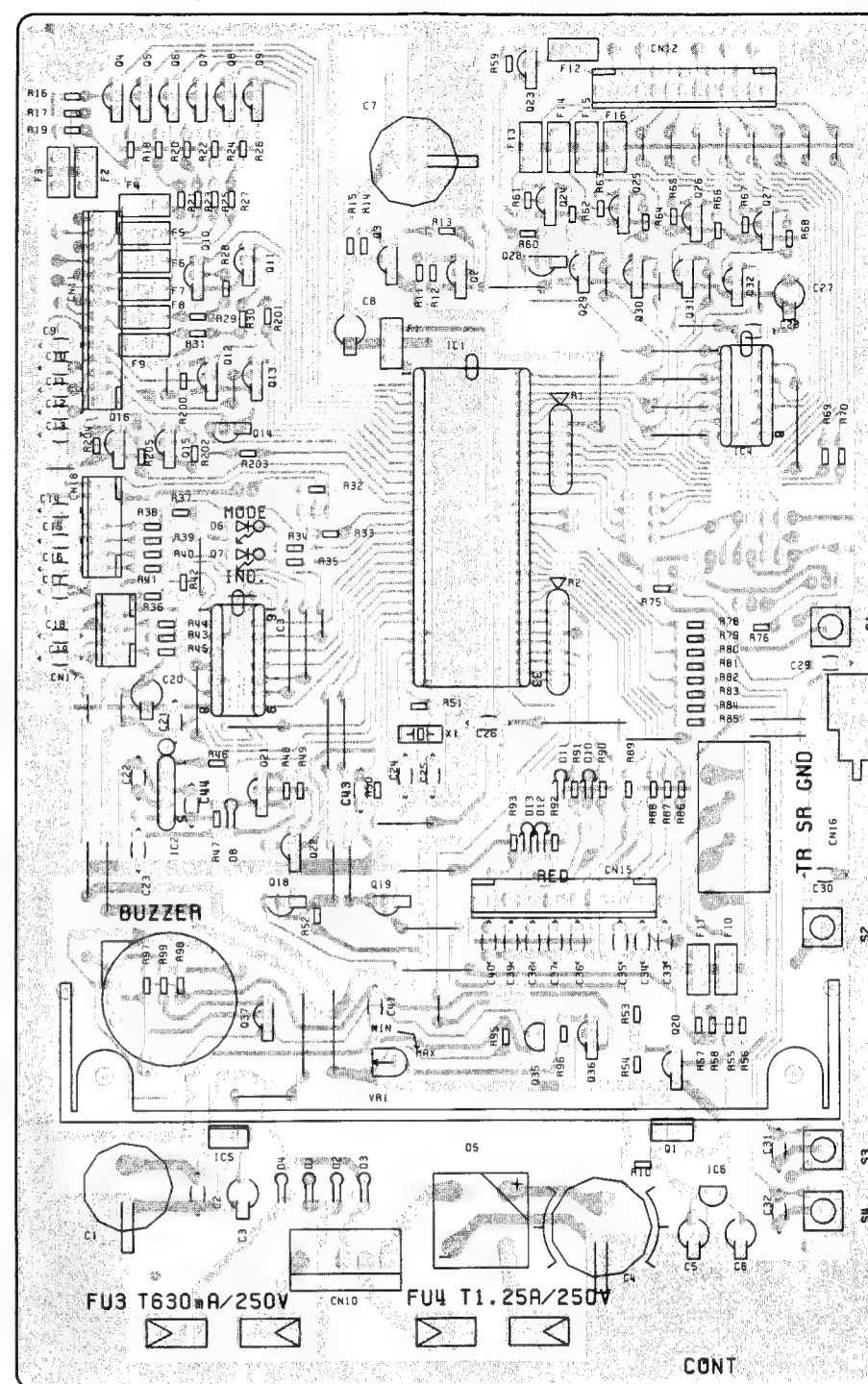
ACSW UNIT



DISP UNIT



CONT UNIT (DWG1065)



2.5 ELECTRICAL PARTS LIST

- NOTES :
- Parts without part number cannot be supplied.
 - Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 - When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).
560 Ω → 56 × 10¹ → 561 RD1/4PS 5 6 1 J
47k Ω → 47 × 10³ → 473 RD1/4PS 4 7 3 J
0.5 Ω → 0R5 RN2H 0 R 5 K
1 Ω → 010 RS1P 0 1 0 K
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω → 562 × 10¹ → 5621 RN1/4SR 5 6 2 1 F
 - The part number of the semiconductors and the pioneer exclusive use parts are not mentioned. Their are mentioned in the schematic diagrams.

Main body unit

Mark	Symbol & Description	Part No.
⊙	CONT unit DISP unit KEYB unit MESS unit ACSW unit BRAN unit	DWG1065

⊙ CONT unit (DWG1065)

CAPACITORS

Mark	Symbol & Description	Part No.
	C24,C25 C1 C4 C3,C5,C6,C8,C20,C27 C7	CCCSL300J50 CEAS332M16 CEAS332M35 CEAS4R7M50 CEAS471M10
	C43,C44 C2,C22,C23,C41 C9 - C19,C21,C26,C28 - C40	CKCYB102K50 CGCYX473M25 CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	VR1 Semi-fixed (47k Ω) R1 Resistor array R2 Resistor array Other resistors	VRTB6VS472 DCN1010 DCN1011 RD1/6PM□□□J

DISP unit

The part number of the service parts are mentioned to the schematic diagram.

KEYB unit

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

MESS unit

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

ACSW unit

CAPACITORS

Mark	Symbol & Description	Part No.
Δ	C1 (0.0047)	DCG1001
Δ	C4 (5 μF)	DCG1003
Δ	C2,C3 (0.01)	RCG-008

RESISTORS

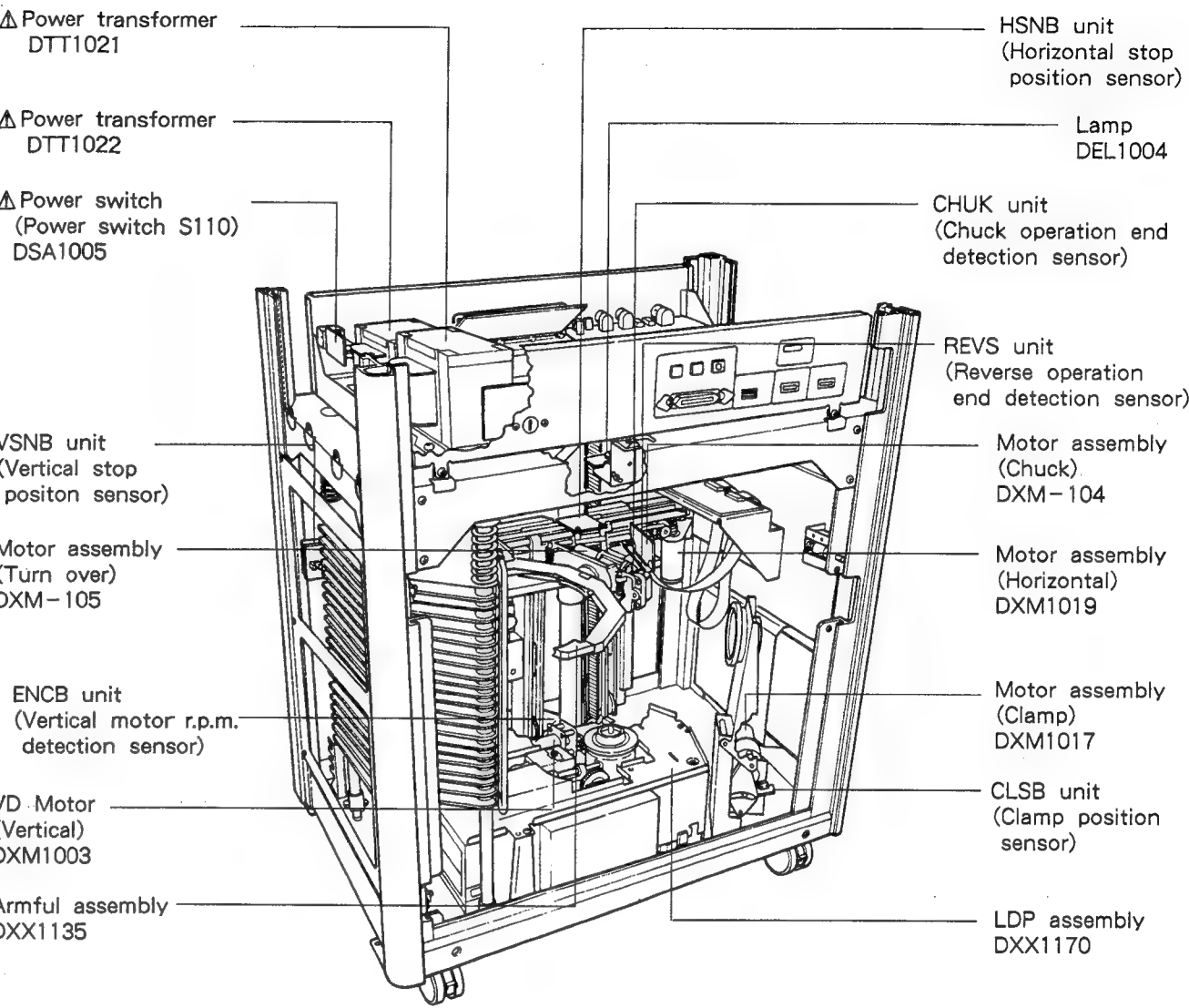
Mark	Symbol & Description	Part No.
	R11	RD1/4PM225J

BRAN unit

Electrical parts are not supplied in this unit.

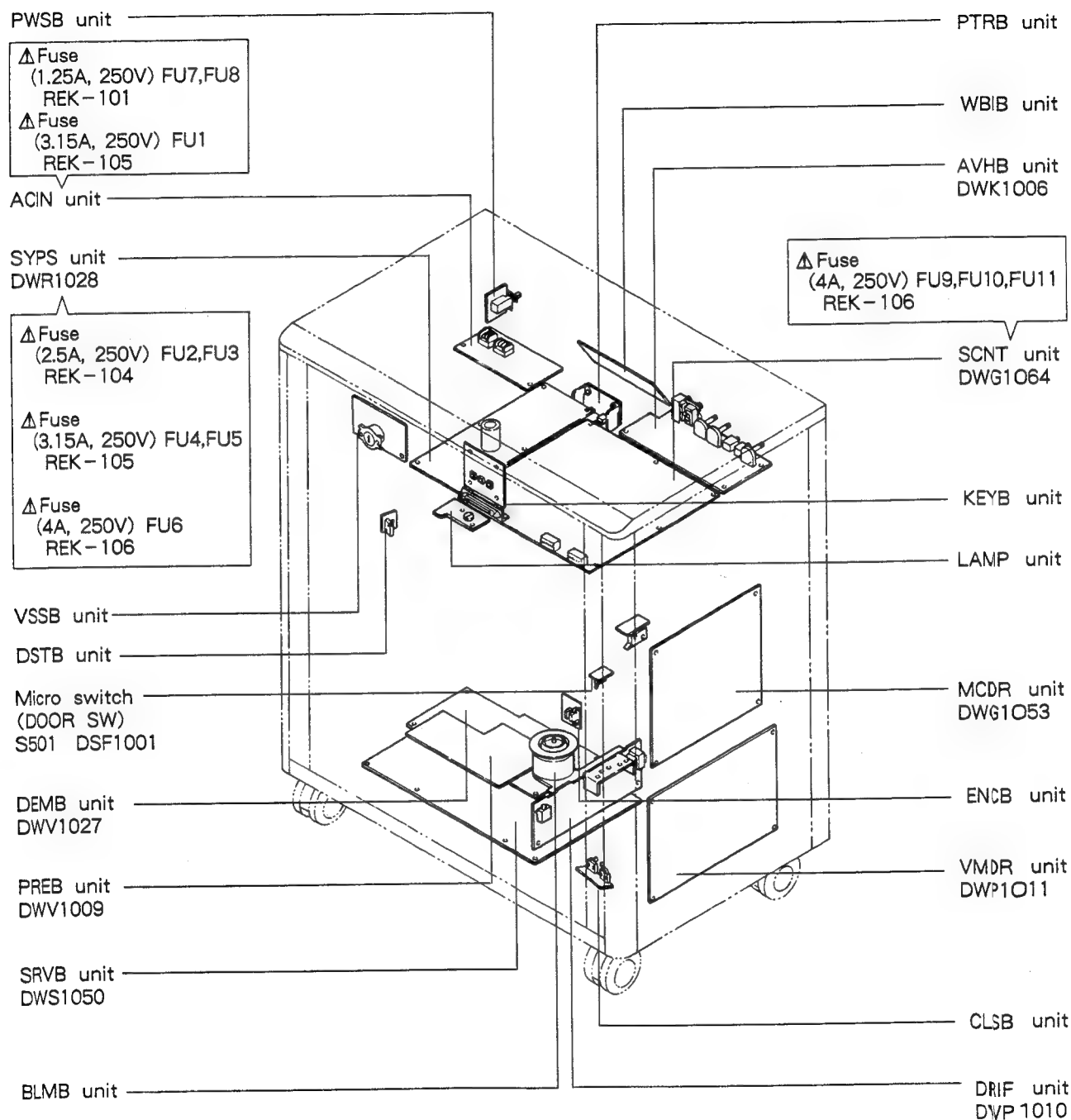
3. VIDEO DISC AUTOCHANGER/LC - V20

3.1 PARTS LOCATION

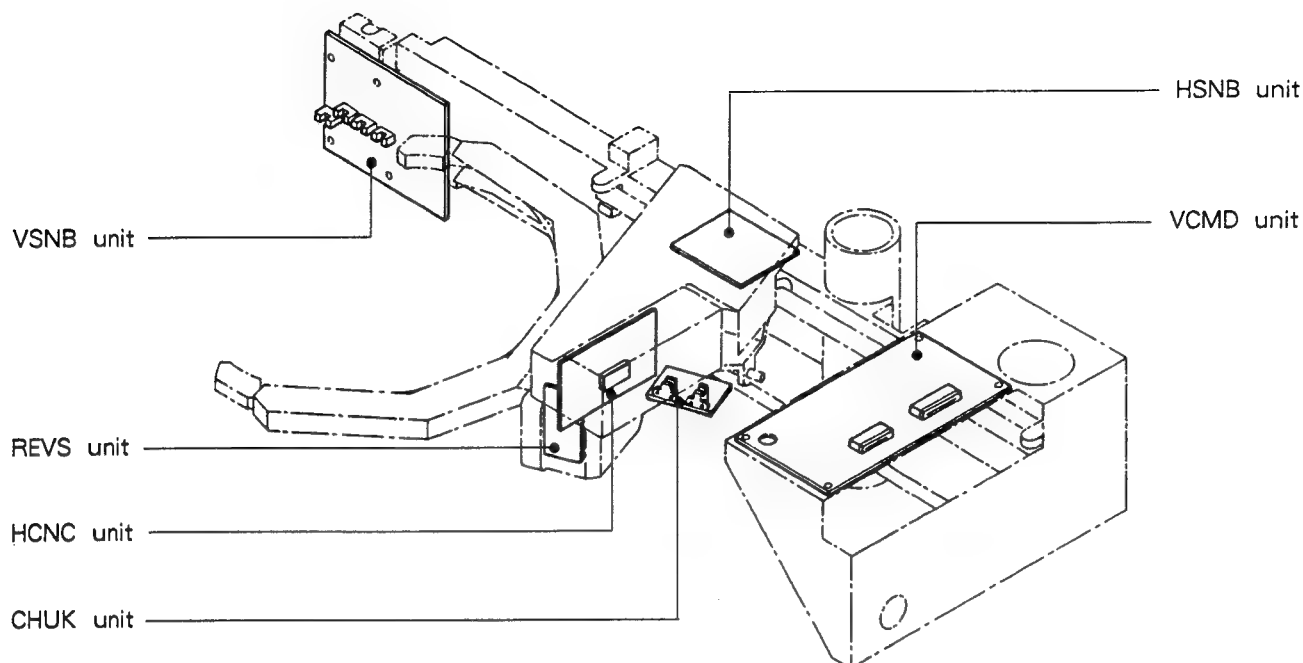


3.2 P.C. BOARDS LOCATION

3.2.1 EXTERIOR



3.2.2 VH base section



LC - V20 P.C. BOARDS NAME

ACIN : AC Input Board

AVHB : Audio, Video and Headphone Board

CHUK : Chucking Sensor Board

CLSB : Clamp and Switch Board

DEMB : Demodulator Board

DRIF : Driver and Interface Board

DSTB : Disc Stopper Board

ENCB : Encoder Board

HCNC : Horizontal Connector Board

HEAD : Head Board

HSNB : Horizontal Sensor Board

KEYB : Key Board

LAMP : Lamp Board

VSSB : Voltage Selector Switch Board

BLMB : Brushless Motor Board

MCDR : Micro-Computer and Driver Board

PREB : Pre-Processing Board

PTRB : Power Transistor Board

PWSB : Power Switch Board

REVS : Reverse Sensor Board

SRVB : Servo Board

SYPS : System Power Supply Board

TLMB : Tilt Motor Board

VCMD : Vertical Controller and Motor Driver Board

VMDR : Vertical Motor Driver Board

VSNB : Vertical Sensor Board

WBIB : Wall-Box Interface Board

SCNT : System Controller Board

3.2 EXPLODED VIEWS AND PARTS LIST

3.2.1 EXTERIOR

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

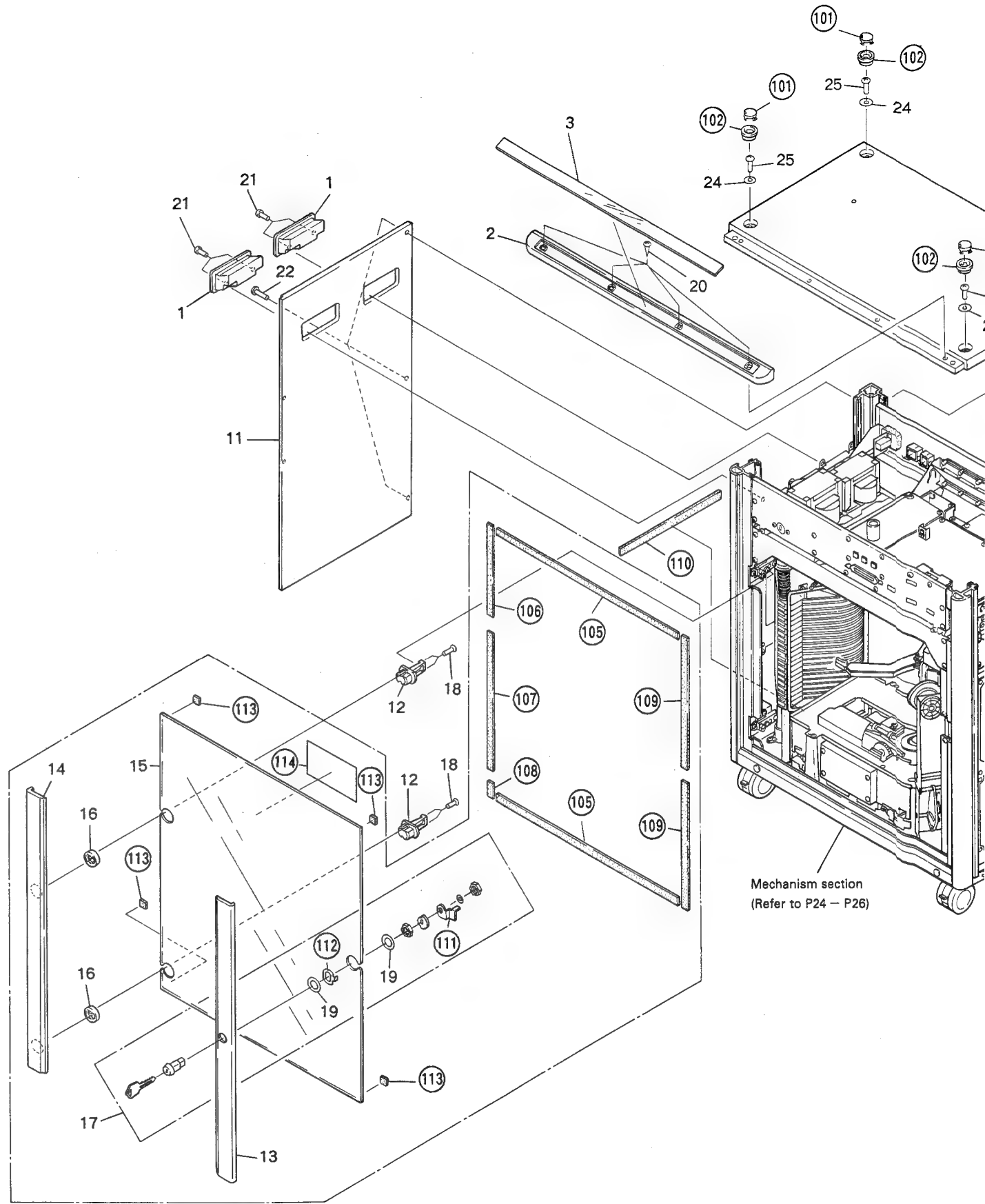
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	DNK1250	Catch		101		Screw cover B
	2	DNK1252	Decoration panel		102		Screw cover A
	3	DAH1214	Name plate		103		Seal packing E
	4	DMK1029	Top panel		104		Seal packing D
	5	DNH1129	Blind panel A		105		Cushion A
	6	DNH1130	Blind panel B		106		Cushion B
	7	DNH1131	Blind panel C		107		Cushion C
	8	VNL-181	Protector		108		Cushion D
	9	DMK1028	Rear panel		109		Cushion E
	10	DMK1027	Side panel R		110		Seal packing B
	11	DMK1026	Side panel L		111		Door settle plate
	12	DXB1063	Slide hinge		112		J settle plate
	13	DAP1017	Glass sash R		113		Stopper
	14	DAP1016	Glass sash L		114		Safety sheet
	15	DAN1007	Front glass				
	16	DNK1224	Catch				
	17	DXB1065	Key cylinder				
	18	CPZ30P120FMC	Screw				
	19	WAX9F300M160	Washer				
	20	DBA1012	Screw				
	21	BBZ40P080FCR	Screw				
	22	Z39-009	Screw				
	23	DBA1010	Screw				
	24	DNH-104	Washer				
	25	PBZ60P300FMC	Screw				

A

B

C

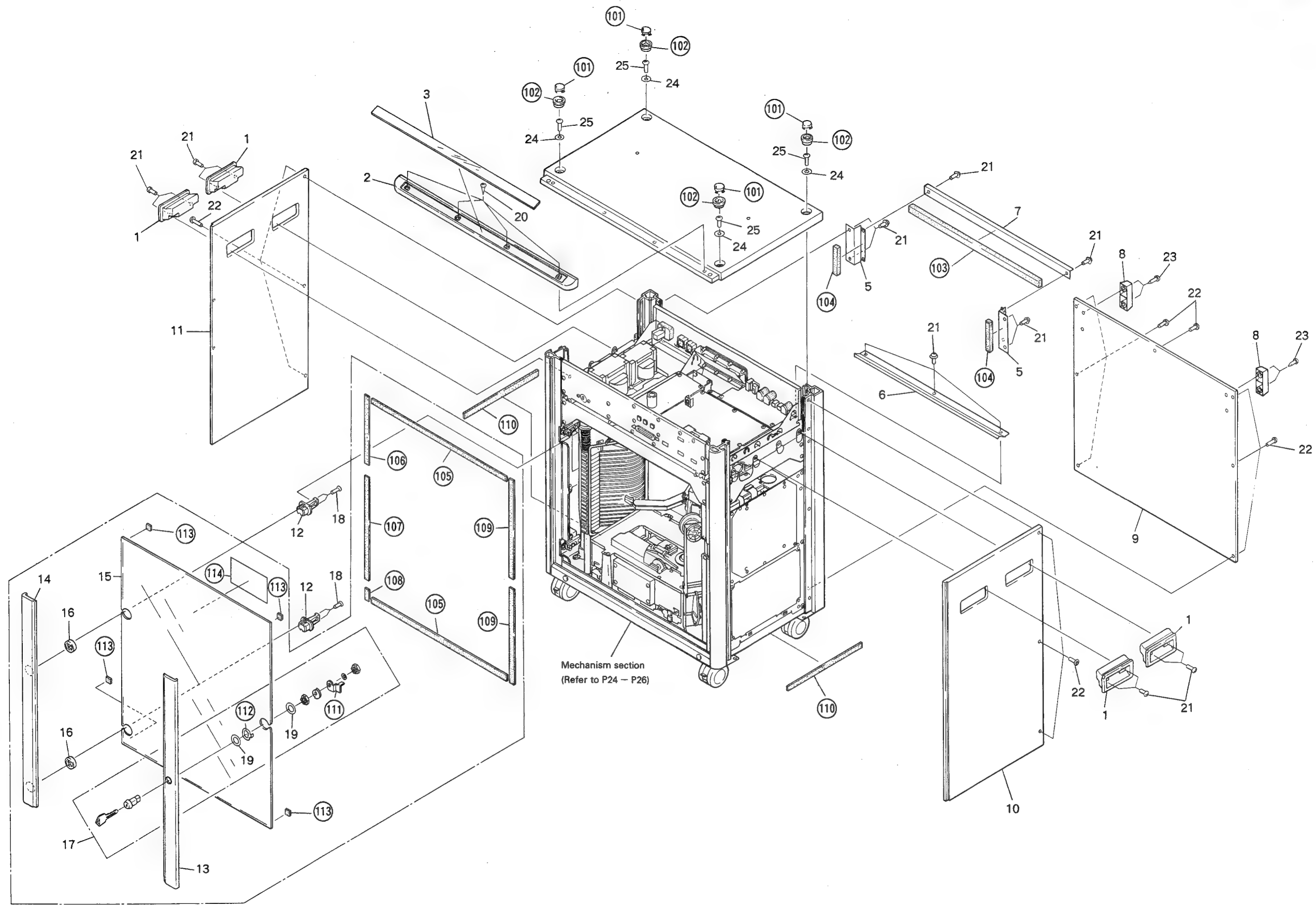
D



Therefore, when
may be unavailable.

for B
for A
for E
for D

for B
plate
te
t

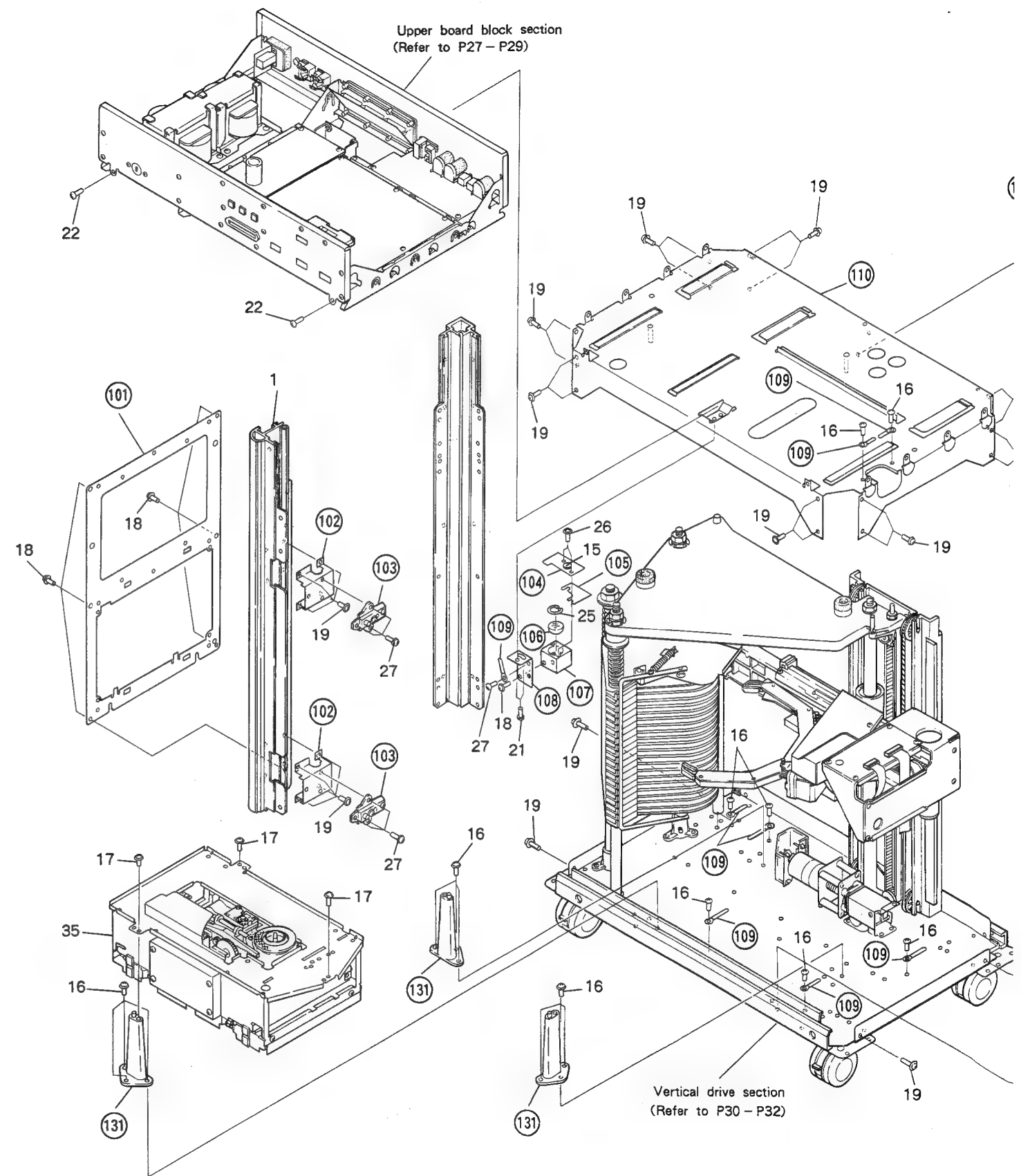


3.2.2 MECHANISM SECTION

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	DNH1140	Frame FL		101		Back plate B
	2	DNH1141	Frame R		102		Hinge plate
	3	DNH1139	Frame FR		103		Mount plate
●	4	DWG1053	MCDR unit		104		LAMP unit
●	5	DWP1011	VMDR unit		105		Spacer
	6	DBH1036	Door lock spring		106		Lens
	7	DSF1001	Micro switch (DOOR SWITCH)		107		Lamp base
	8	CKDYF473Z50	Ceramic capacitor (C1)		108		Lamp holder plate
	9	DXM1017	Motor assembly (CLAMP)		109		Cord holder
					110		Upper frame
	10	DLA1135	Roller		111		Cord holder
	11	VNL1001	Clamper head		112		Back plate C
	12	VLL1002	Yoke		113		Door lock shaft
	13	DNK1251	Hole cap		114		DRS guide
	14	DDD1008	Flexible cord		115		Door lock plate
	15	DEL1004	Lamp		116		SYPS stay
	16	AMZ40P100FMC	Screw		117		Back plate A
	17	AMZ30P080FZK	Screw		118		Shield plate
	18	AMZ40P080FMC	Screw		119		Clamper magnet
	19	AMZ50P100FMC	Screw		120		Disc clamper
	20	BBZ30P080FZK	Screw		121		Buffer sheet
	21	BBZ40P080FMC	Screw		122		Clamp arm
	22	AMZ40P060FZK	Screw		123		Shaft A
	23	YE20FUC	E ring 2		124		Shaft C
	24	PMH20P100FMC	Screw		125		Plate
	25	YDX5S	C ring 15		126		Joint arm
	26	AMZ30P060FMC	Screw		127		CLamp base
	27	BBZ30P080FMC	Screw		128		SW cam
	28	PMA40P100FMC	Screw		129		CLSB unit
	29	PMB30P060FMC	Screw		130		Shaft B
	30	YE30FUC	Washer		131		LDP plate assembly
	31	YE40FUC	Washer		132		Shield sheet
	32	ZMD26H050FBT	Screw				
	33	CMZ26P050BNT	Screw				
	34	VEB1009	Rubber foot (A)				
●	35	DXX1170	LDP assembly				

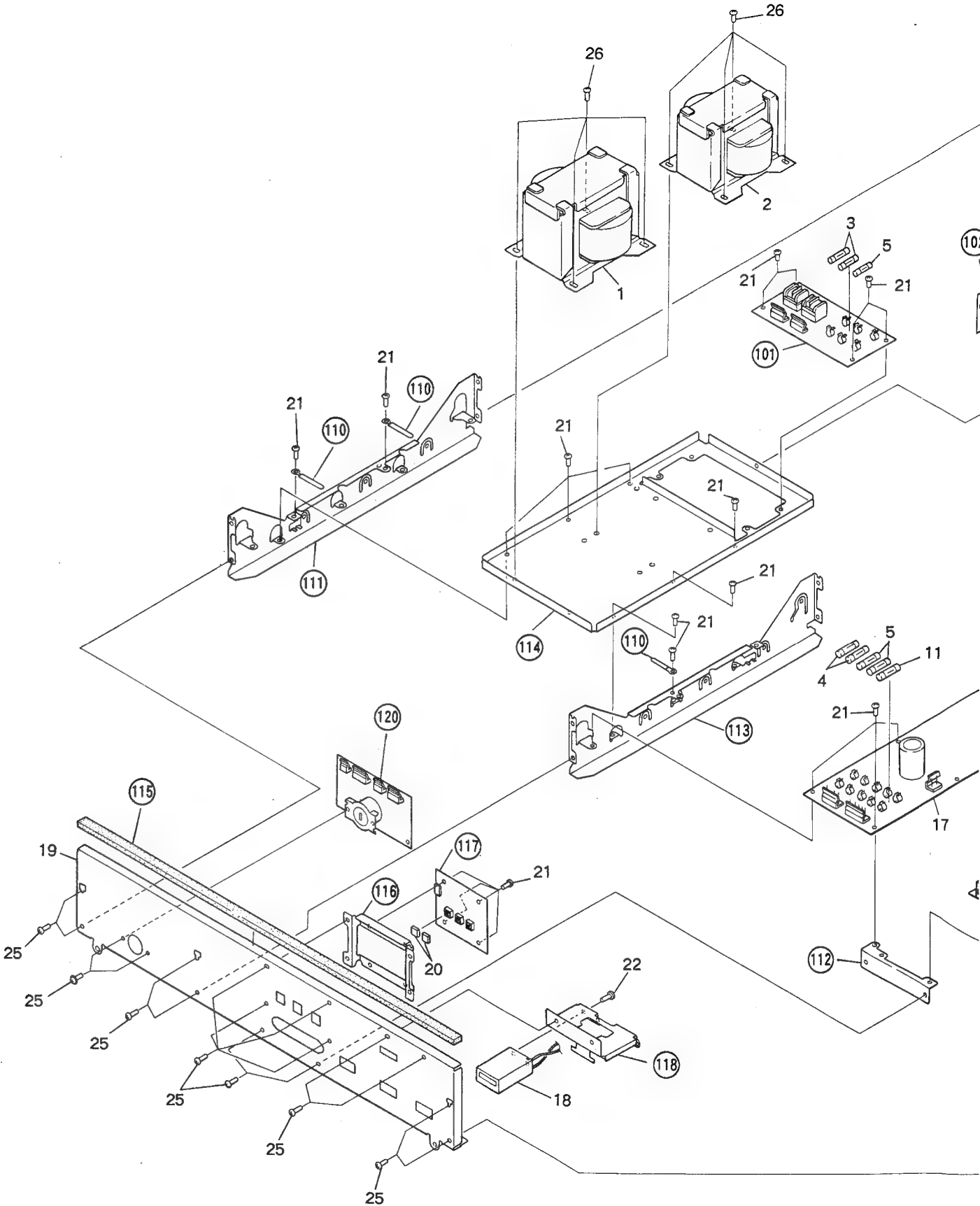
*1: Apply the froil GB-TS-1 (Z51-016)

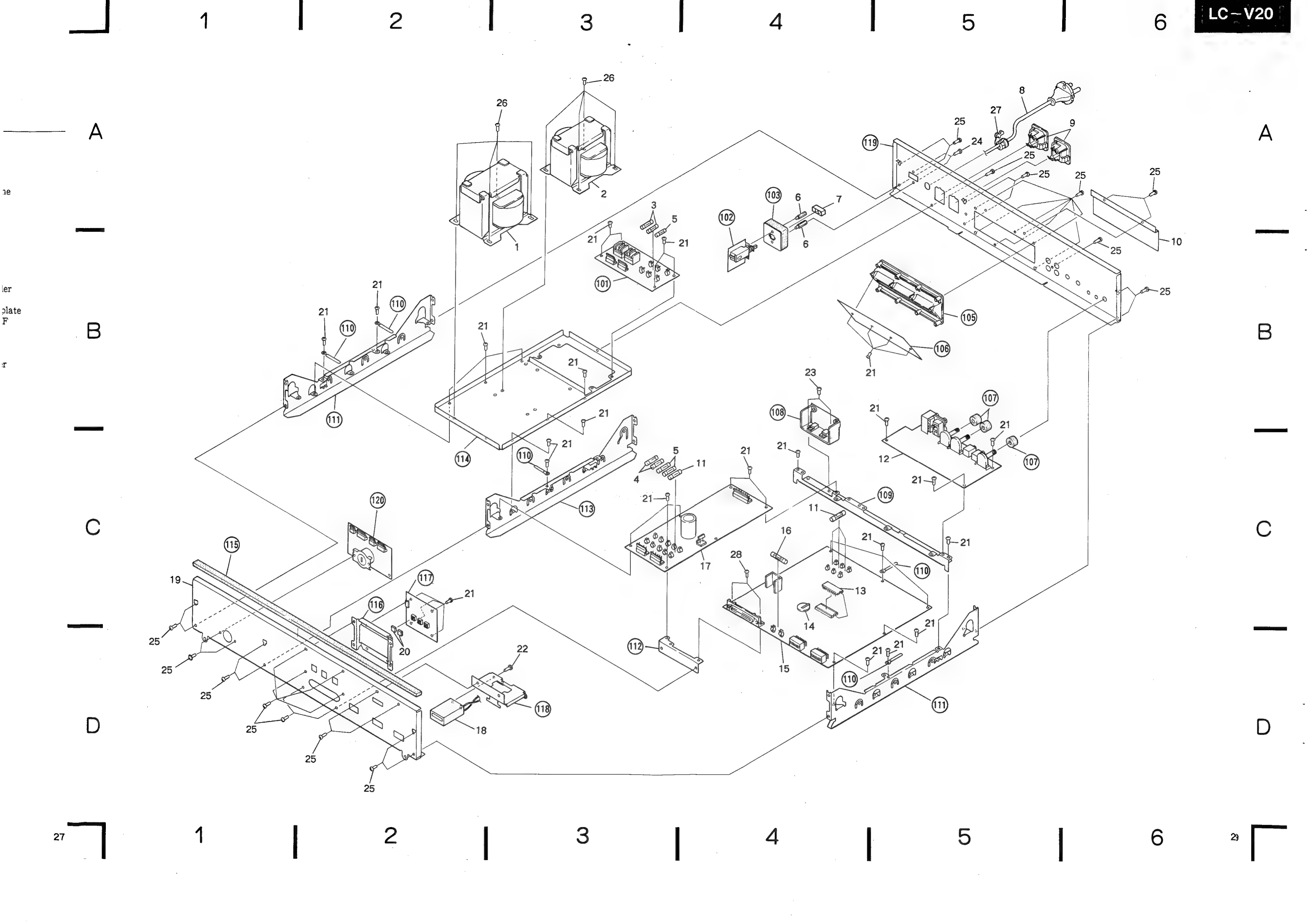
*2: The portion of indicate "*2" are put by the screw
tight # 300VB (ASCE-0300)*3: The portion of indicate "*3" are put by the dia-bond
1663 (ASCR-2663)

3.2.3 UPPER BOARD BLOCK SECTION

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
△	1	DTT1021	Power transformer		101		ACIN unit
△	2	DTT1022	Power transformer		102		PWSB unit
△	3	REK-101	Fuse(1.25A/250V, FU7,FU8)		103		C stopper A
△	4	REK-104	Fuse (2.5A/250V, FU2,FU3)		104		.....
△	5	REK-105	Fuse (3.15A/250V, FU1,FU4,FU5)		105		Terminal frame
	6	DLA-177	Stud		106		WBIB unit
	7	DAC1107	Push knob		107		C stopper B
△	8	DDG1011	AC power cord		108		PTRB unit
△	9	AKP-508	AC outlet (1P)		109		Connect unit
	10	DNH1132	Terminal cover		110		Cord holder
					111		Side frame
△	11	REK-106	Fuse (4A/250V, FU6, FU9 - FU11)		112		Terminal holder
●	12	DWK1006	AVHB unit		113		Center frame
	13	DYW1029	IC1		114		Transformer plate
	14	DEM1001	Battery		115		Seal packing F
					116		P.C.B holder
●	15	DWG1064	SCNT unit		117		KEYB unit
	16	VCX-006	Hour meter		118		Counter holder
●	17	DWR1028	SYPS unit		119		Rear panel
	18	DAW1006	Electromgnetic counter		120		VSSB unit
	19	DNB1007	Front panel				
	20	DAC-116	Push button				
	21	BBZ30P080FMC	Screw				
	22	PMZ30P030FMC	Screw				
	23	BBZ30P060FMC	Screw				
	24	AMZ30P060FZK	Screw				
	25	BBZ30P080FZK	Screw				
	26	BBZ40P080FMC	Screw				
△	27	CM-22B	Strain relief				
	28	BBZ30P100FMC	Screw				



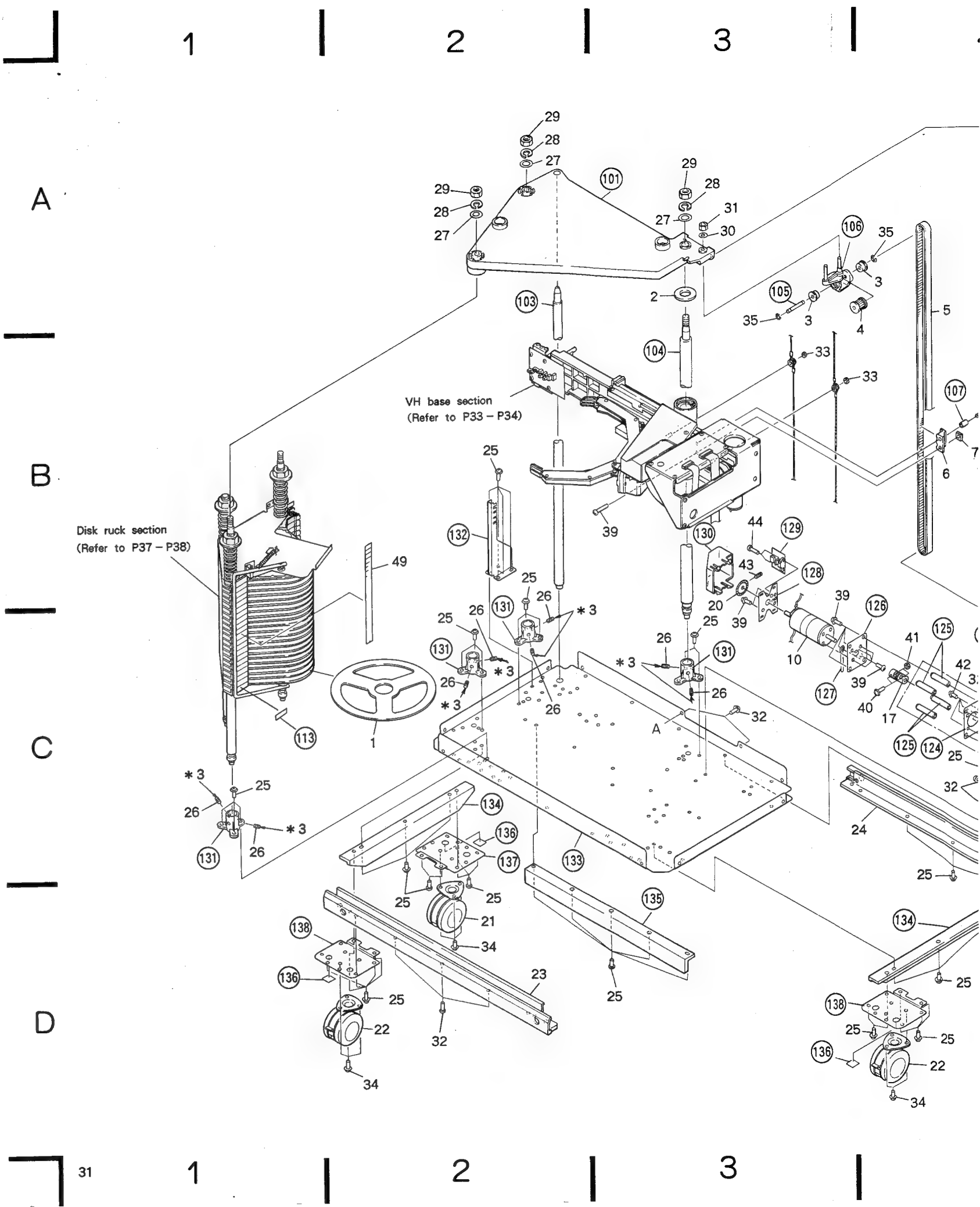


3.2.4 VERTICAL DRIVE SECTION

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	DEC-137	Dummy disc		101		Upper base
	2	DNH-125	Washer assembly		102		.....
	3	DXB-109	Bearing		103		Guide shaft
	4	DMA-112	Pulley D		104		Linear shaft
	5	DMS1004	Timing belt		105		Pulley shaft B
	6	DMA-115	Belt presser		106		Pulley holder assembly
	7	DNH1133	Nut		107		Collar
	8	DMA-120	Weight roller		108		Rock plate H
	9	DLA-134	Weight pulley shaft		109		.....
	10	DMA-121	Weight pulley		110		.....
	11	DXB1061	Wire assembly		111		.....
	12	DBH-120	Weight spring		112		.....
	13	DLA1064	Worm gear assembly		113		Caution label
	14	DLA1145	Worm foil assembly		114		Rail
	15	DEB1003	PL ring		115		Weight assembly
	16	DXX1134	Gear box assembly		116		Flange
	17	DNK1043	Coupling		117		Oil seal
	18		.....		118		O ring
	19	DXM1003	VD motor (VERTICAL)		119		Bearing
	20	DXB1021	Disc slit		120		Bearing
	21	DXB1053	Caster		121		Gear box
	22	DXB1052	Caster S		122		Flange
	23	DNH1137	Under frame F		123		GB holder
	24	DNH1138	Under frame R		124		GB plate
	25	AMZ40P100FMC	Screw		125		VM boss
	26	ZMD50H080FBT	Screw		126		VM plate
	27	WDXOFMC	Washer		127		Cord holder
	28	WSXOFMC	Spring washer		128		VME plate
	29	NBXOFMC	Nut		129		ENCB unit
	30	WB60FMC	Washer		130		Motor cover
	31	NB60FMC	Nut		131		Shaft plate
	32	AMZ40P080FMC	Screw		132		LDP slit
	33	NN30FUC	Nylon nut		133		Under base
	34	PMA50P100FMC	Screw		134		Reinforced angle B
	35	YE40FUC	E ring 4		135		Reinforced angle A
	36	PMH30P140FMC	Screw		136		Seal
	37	VEB1009	Rubber foot (A)		137		Caster hold plate B
	38	DNK1258	VD pulley		138		Caster hold plate A
	39	AMZ30P060FMC	Screw				
	40	PMZ26P080FMC	Screw				
	41	NB26FMC	Nut 2.6				
	42	AMZ30P160FMC	Screw				
	43	ZMD26H030FBT	Screw				
	44	AMZ20P060FMC	Screw				
	45	ZMD40H080FBT	Screw				
	46	WA52D080D025	Polyslider				
	47	WA52D120D025	Polyslider W				
	48		.....			
	49	DAH1177	Address label				

* 1 : Apply the froil GB-TS-1 (Z51-016)
* 2 : Apply the super highland oil (Z51-045)
* 3 : The portion of indicate " * 3 " are put by the screw tight # 300VB (ASCE-0300)
* 4 : The portion of indicate " * 4 " are put by the dia-bond # 1663 (ASCR-2663)



1

2

3

4

5

6

A

B

C

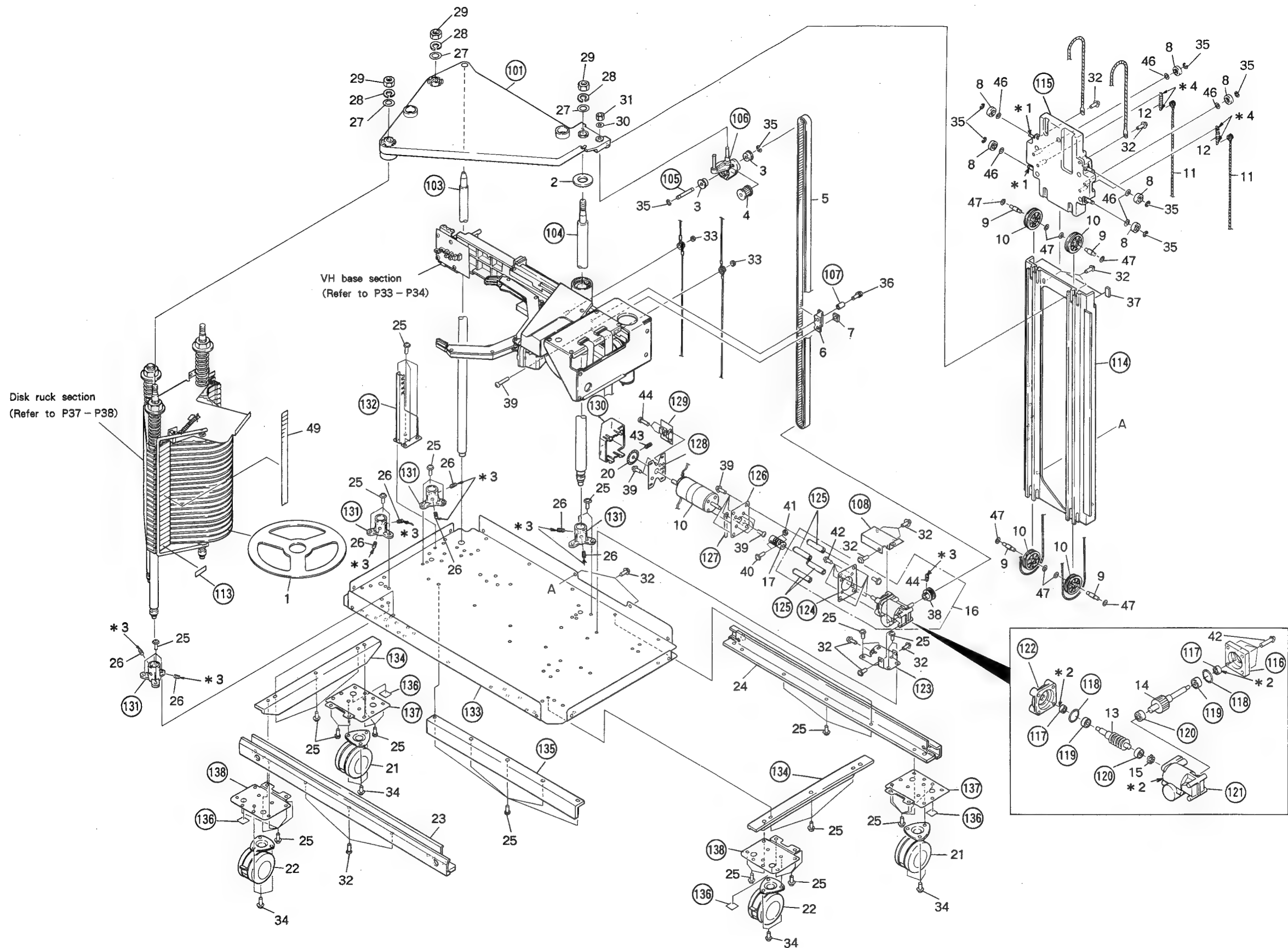
D

A

B

C

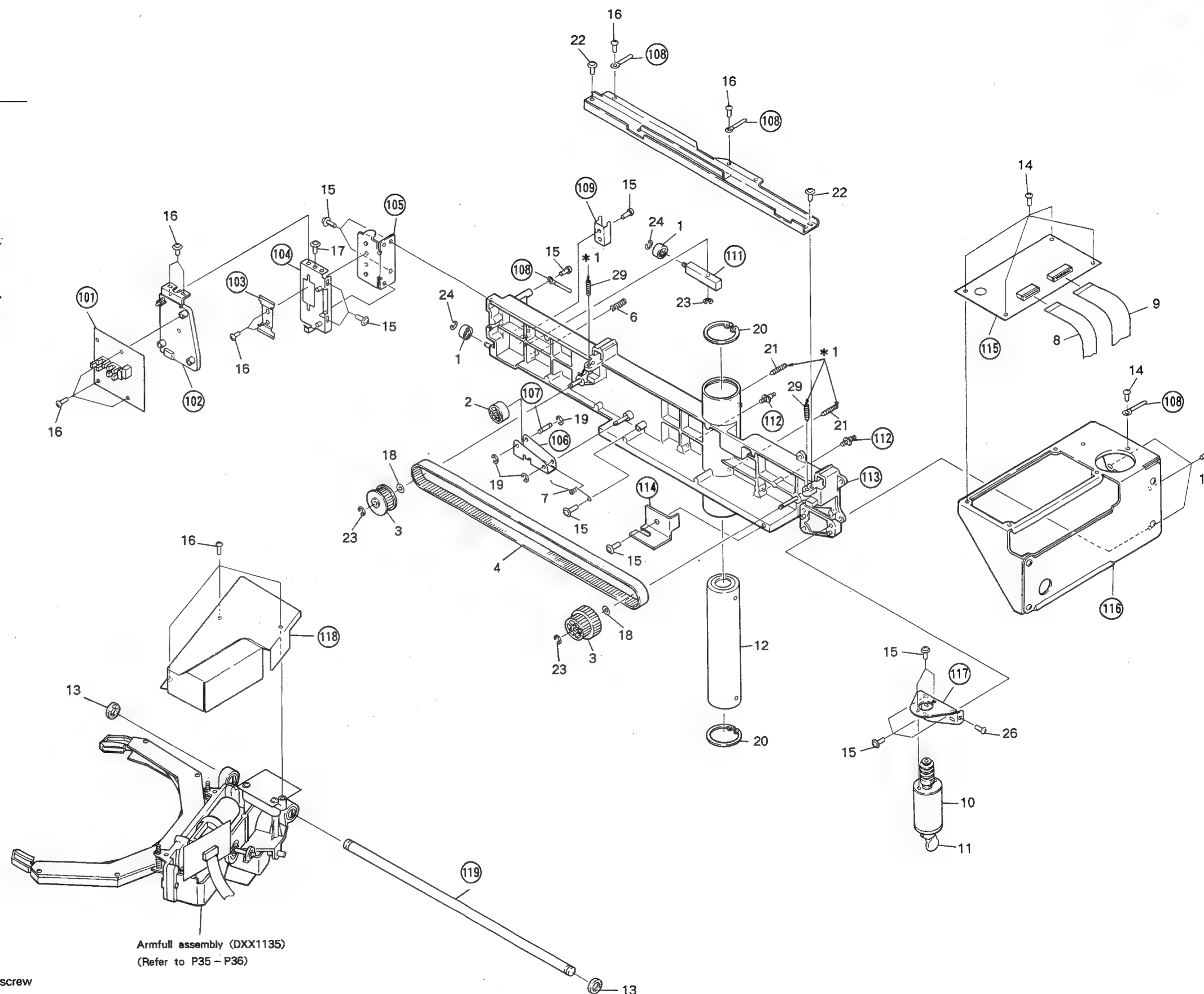
D



3.2.5 VH BASE SECTION

Parts List

Mark	No.	Part No.	Description
A	1	DXB1088	Bearing
	2	DMA-122	Tension roller
	3	DMA-114	Pulley F
	4	DMS-103	Timing belt
	5	DMA-113	Pulley E
	6	DBH-119	Spring
	7	DBH-112	Torsion spring
	8	DDD1007	Flexible cord (VCMD unit - CN426 ⇄ HCNC unit - CN501)
	9	DDD1008	Flexible cord (VCMD unit - CN421 ⇄ MCDR unit - CN501)
	10	DXM1019	Motor assembly (HORIZONTAL)
B	11	CKDYF473Z50	Ceramic capacitor (C2)
	12	DXB-124	SB sleeve
	13	DEB-105	Rubber washer
	14	BBZ30P060FMC	Screw
	15	AMZ30P060FMC	Screw
	16	BBZ30P080FZK	Screw
	17	AMZ30P100FMC	Screw
	18	WA71D110D025	Polyslider washer
	19	YE30FUC	E ring 3
	20	RTW-32	C ring
	21	ZMD40H060FBT	Screw
	22	AMZ40P080FMC	Screw
	23	YE50FUC	E ring 5
	24	YE40FUC	E ring 4
	25		.....
C	26	PMA30P080FMC	Screw
	27		.....
	28		.....
	29	ZMD40H180FBT	Screw
	101		VSNB unit
	102		V sensor plate
	103		VS plate C
	104		VS plate B assembly
	105		VS plate A
	106		Tension roller plate
	107		Tension roller shaft
	108		Cord holder
	109		VD belt plate
	110		Slit plate H
	111		Roller bar assembly
	112		Hook pin
	113		VH base assembly
	114		Arm set plate
	115		VCMD unit
D	116		PC holder
	117		Motor holder plate
	118		Sensor cover
	119		Guide bar



*1: The portion of indicate "*1" are put by the screw
tight # 300VB (ASCE-0300)

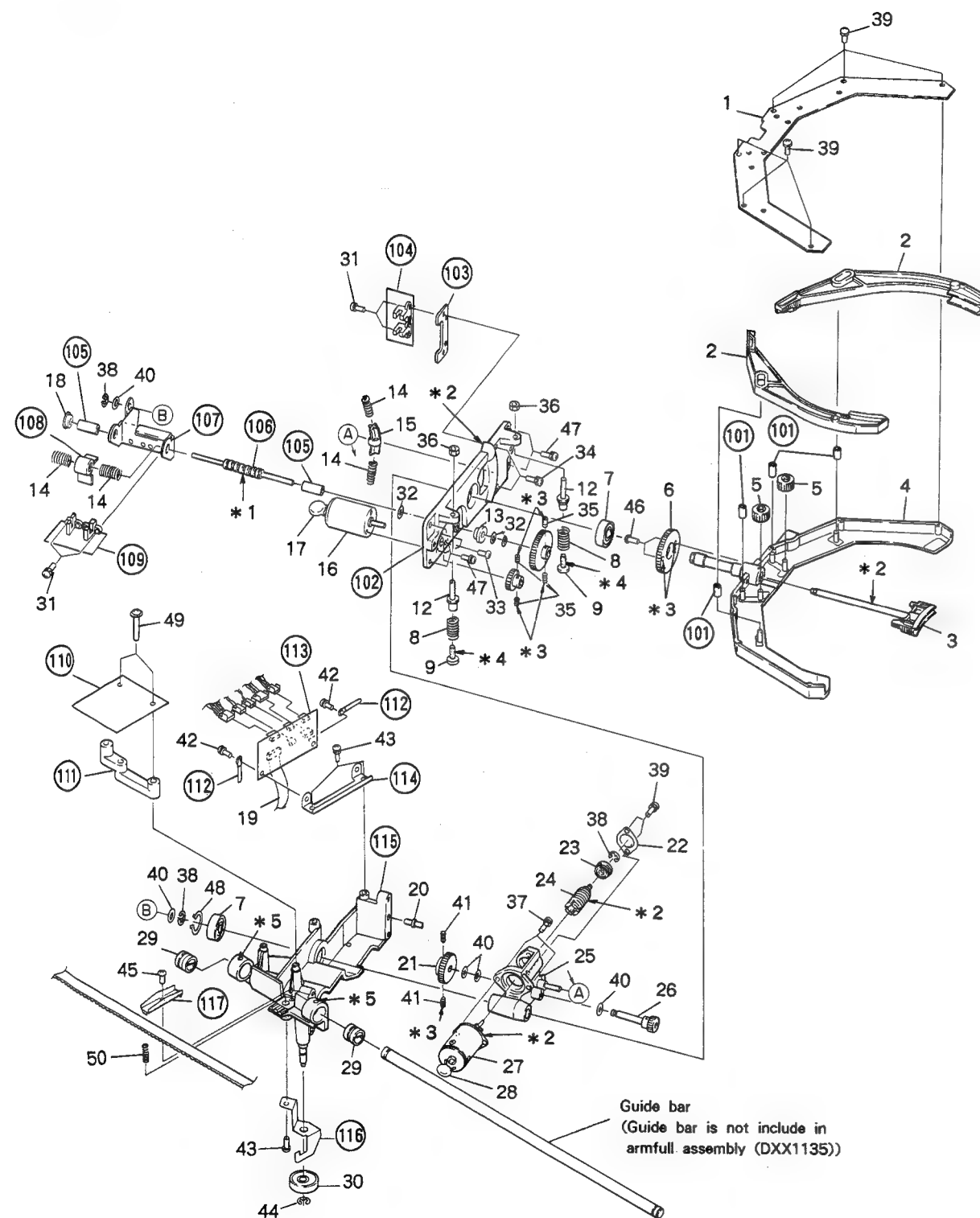
3.2.6 ARMFUL ASSEMBLY (DXX1135)

A

B

C

D



Parts List

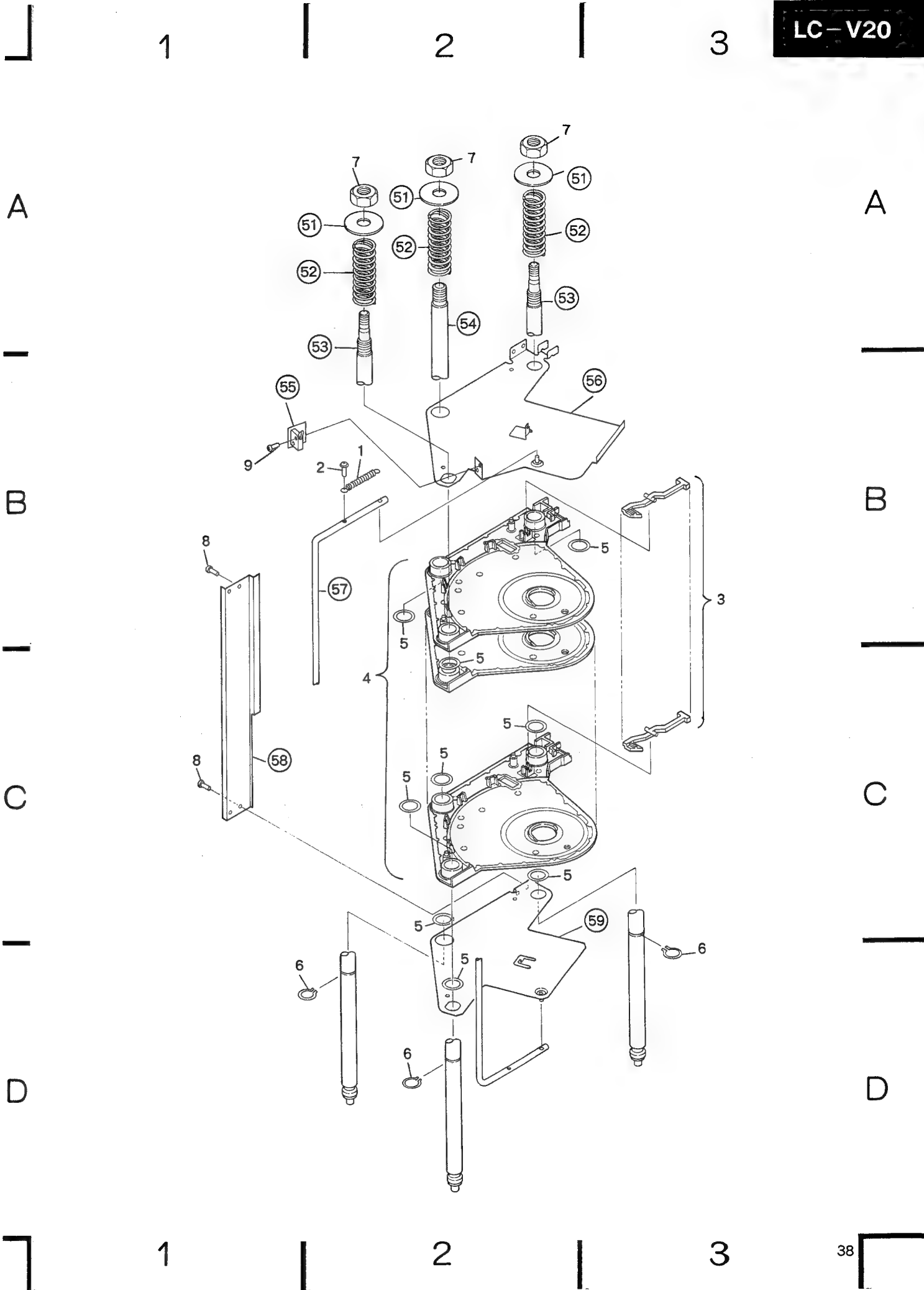
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	DNH-120	Arm cover		101		Curler
	2	DMA-137	Arm		102		Arm base A
	3	DMA-138	Chuck		103		SW holder
	4	DXB-106	Arm cover assembly		104		REVS unit
	5	DMA-139	Idle gear		105		Curler
	6	DMA-132	Reverse gear B		106		Drive shaft
	7	DXB-116	Bearing		107		Drive plate
	8	DBH1001	Damper spring		108		Drive top
	9	DEB-124	Damper rubber		109		CHUK unit
	10	DMA-177	Chuck gear B		110		HSNB unit
	11	DMA-129	Chuck gear A		111		H sensor plate
	12	DLA1003	Ajustmet screw		112		Cord holder
	13	DXB1084	Bearing		113		HCNC unit
	14	DBH-127	Road spring		114		PC holder B
	15	DMA-135	SP holder		115		Arm base B assembly
	16	DXM-104	Motor (CHUK)		116		Plate
	17	CKDYF473Z50	Ceramic capacitor (C4)		117		Belt presser
	18	DXB1083	Bearing				
	19	DDD1007	Flexible cord (HCNC unit - CN416 ⇔ VCMD unit - CN426)				
	20	DLA-143	Pin				
	21	DNK1257	Worm foil				
	22	DNF-128	Bearing holder				
	23	DXB-115	Bearing				
	24	DLA-156	Worm gear				
	25	DXB-105	Reverse base assembly				
	26	DMA-131	Reverse gear A				
	27	DXM-105	Motor assembly (REVERSE)				
	28	CKDYF473Z50	Ceremic capacitor (C3)				
	29	DXB-125	Bushing				
	30	DXB1088	Bearing				
	31	PMH30P060FMC	Screw				
	32	WA42D080D025	Polyslider washer				
	33	PMA20P040FMC	Screw				
	34	PMH30P140FMC	Screw				
	35	ZMD30H040FBT	Screw				
	36	NB40FMC	Nut 4				
	37	PMH30P120FMC	Screw				
	38	YE30FUC	E ring 3				
	39	PMH26P060FMC	Screw				
	40	WA52D080D025	Polyslider washer				
	41	ZMD30H060FBT	Screw				
	42	BBZ30P060FMC	Screw				
	43	AMZ30P060FMC	Screw				
	44	YE40FUC	E ring 4				
	45	PMH40P080FMC	Screw				
	46	BMZ30P060FMC	Screw				
	47	AMZ40P120FMC	Screw				
	48	YCX0FBT	C ring 10				
	49	AMZ30P200FMC	Screw				
	50	DBH-117	Clamp spring				

- *1 : Apply the froil # 947P (Z51-038)
 *2 : Apply the froil GB-TS-1 (Z51-016)
 *3 : The portion of indicate "*3" are put by the screw
 tight # 300VB (ASCE-0300)
 *4 : The portion of indicate "*4" are put by the dia-bond
 # 1663 (ASCR-2663)
 *5 : The portion of indicate "*5" are put by the look tight
 # 460 (AMAC 0460)

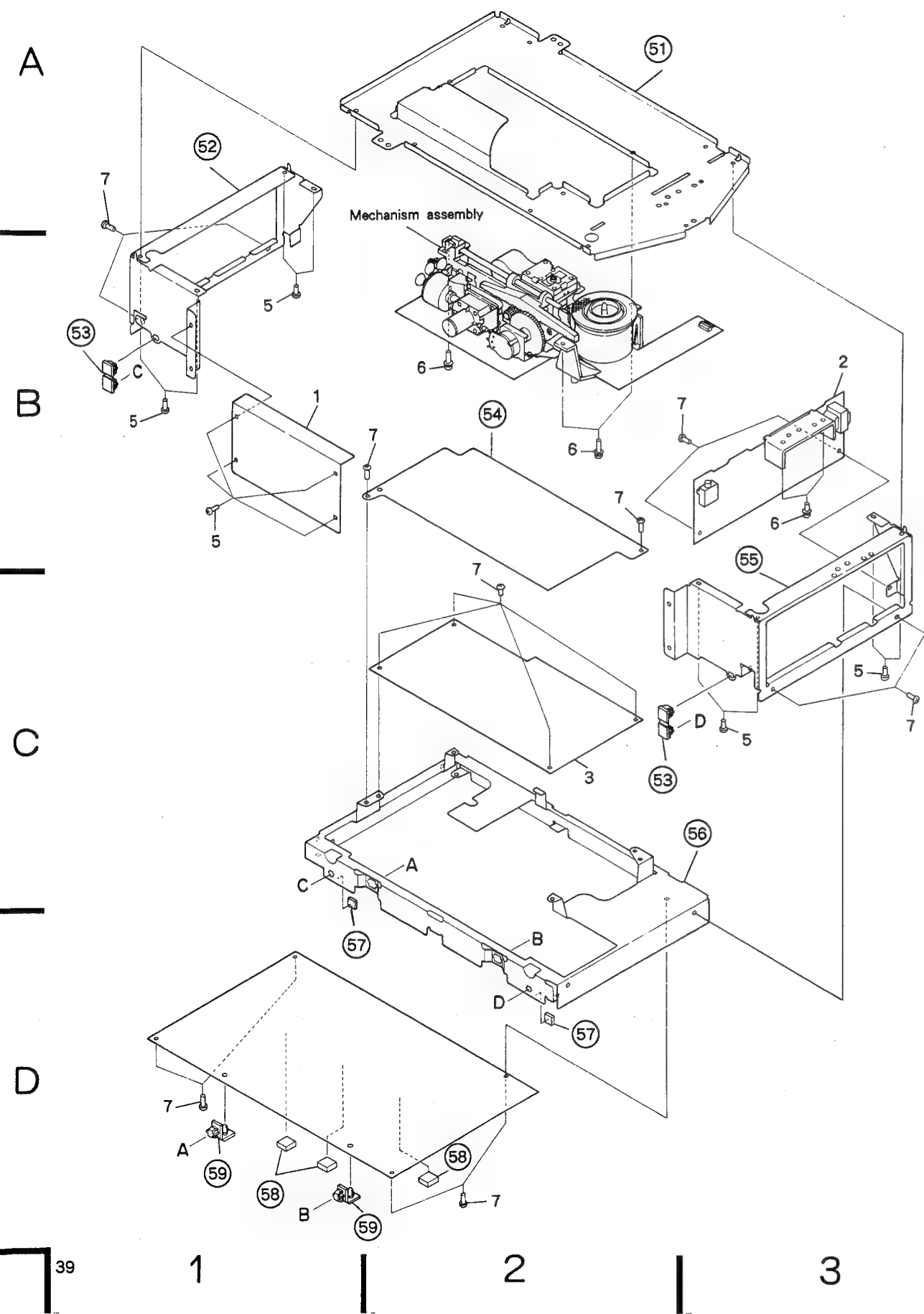
3.2.7 DISC RACK

Parts List

Mark	No.	Part No.	Description
	1	DBH1031	Spring
	2	DBA1001	Screw
	3	DMA-185	Detector lever
	4	DNK1215	Disc rack
	5	DNH1002	Rack washer
	6	YCX6FBT	C ring 16
	7	NBX4FMC	Nut 14
	8	BBZ30P080FMC	Screw
	9	PMH20P100FMC	Screw
	51		Washer
	52		Rack spring
	53		Rack shaft A
	54		Rack shaft B
	55		DSTB unit
	56		Rack set plate assembly A
	57		Disc clumper
	58		Slit plate V
	59		Rack set plate assembly B



3.2.8 LDP ASSEMBLY (DXX1170)



Parts List

Mark	No.	Part No.	Description
	1	DEC1093	LF cover
●	2	DWP1010	DRIF unit
●	3	DWV1027	DEMB unit
●	4	DWS1050	SRVB unit
	5	BBZ30P060FZK	Screw
	6	PMB30P100FZK	Screw
	7	BBZ30P080FMC	Screw
	51		LVP base
	52		Side cover L
	53		Hinge
	54		Sealed plate
	55		Side cover R
	56		P.C.B holder
	57		SR spacer
	58		Spacer cushion
	59		P.C.B hinge

3.2.9 MECHANISM ASSEMBLY

Parts List

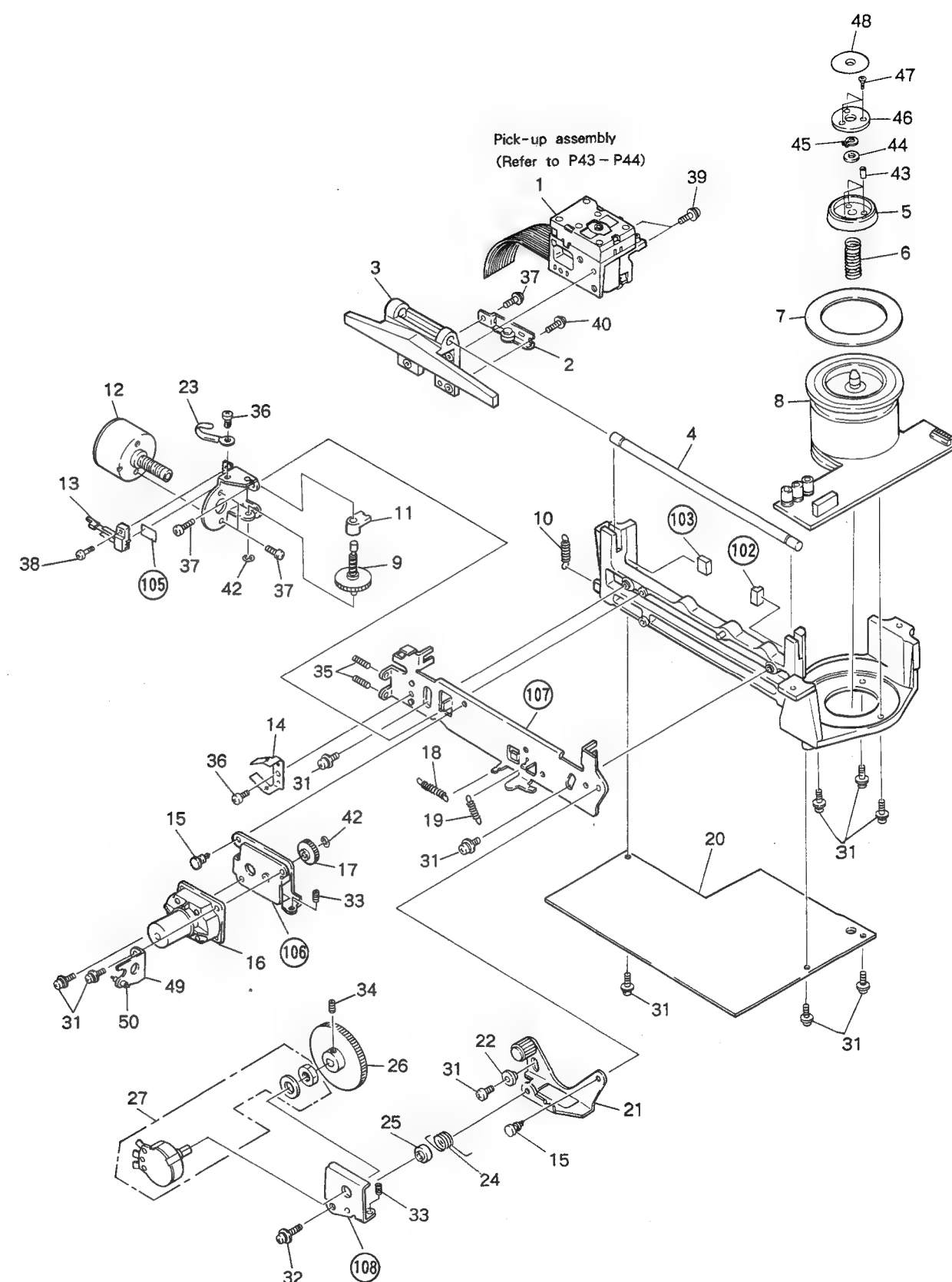
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	VWY1005	Pick-up assembly		101		Mchanism chassis assembly
	2	VXA-394	Roller arm assembly		102		Cushion rubber (A)
	3	DMA1001	Slider		103		Cushion rubber (B)
	4	DLA1001	Shaft		104		Tilt holder
	5	DLA1137	Centering hab		105		Insulator bushing
	6	DBH1032	Centering spring		106		Motor holder assembly
	7	VEB1008	Rubber spacer		107		Tilt base
	8	DXM1018	Spindle motor		108		PM support
	9	VXA-387	Tilt shaft assembly				
	10	VBH-142	Tilt spring				
	11	VNV-036	Tilt nut				
	12	VXM-060	Tilt motor (TILT)				
	13	PSN-003	Leaf switch (TILT LIMIT.S5)				
	14	VNE-701	Switch regulator plate				
	15	VEC-143	Plastic rivet				
	16	VXM-076	Slider motor (SLIDER)				
	17	VNL-623	Slider pinion				
	18	VBH-138	Slider motor spring				
	19	VBH-175	Potention meter spring				
	20	DWV1009	PREB unit				
	21	VXA-439	PM holder assembly				
	22	VLL-311	Washer				
	23	RNH-184	Cord holder				
	24	VBH-140	Torsion spring				
	25	VLL-310	PM washer				
	26	VNL-508	Potention pinion B				
	27	DSC1006	Potention meter				
	28		.....			
	29		.....			
	30		.....			
	31	PMB30P080FMC	Screw				
	32	PMB30P100FMC	Screw				
	33	ZMD30H080FBT	Screw				
	34	ZMD30H060FBT	Screw				
	35	ZMD30H120FBT	Screw				
	36	BBZ30P060FMC	Screw				
	37	PMA26P040FMC	Screw				
	38	PMZ20P050FMC	Screw				
	39	PMB26P060FMC	Screw				
	40	AMZ26P070FMC	Screw				
	41		.....			
	42	YE20FUC	Washer				
	43	VLL1001	Coller				
	44	WA62N120W020	Washer				
	45	YC60FBT	Washer				
	46	VLL-045	Plate				
	47	CMZ26P140FZK	Screw				
	48	DEC1083	Center sheet				
	49	VNE-807	Filter holder				
	50	VCG-005	Thrn type capacitor				

A

B

C

D



A

B

C

D

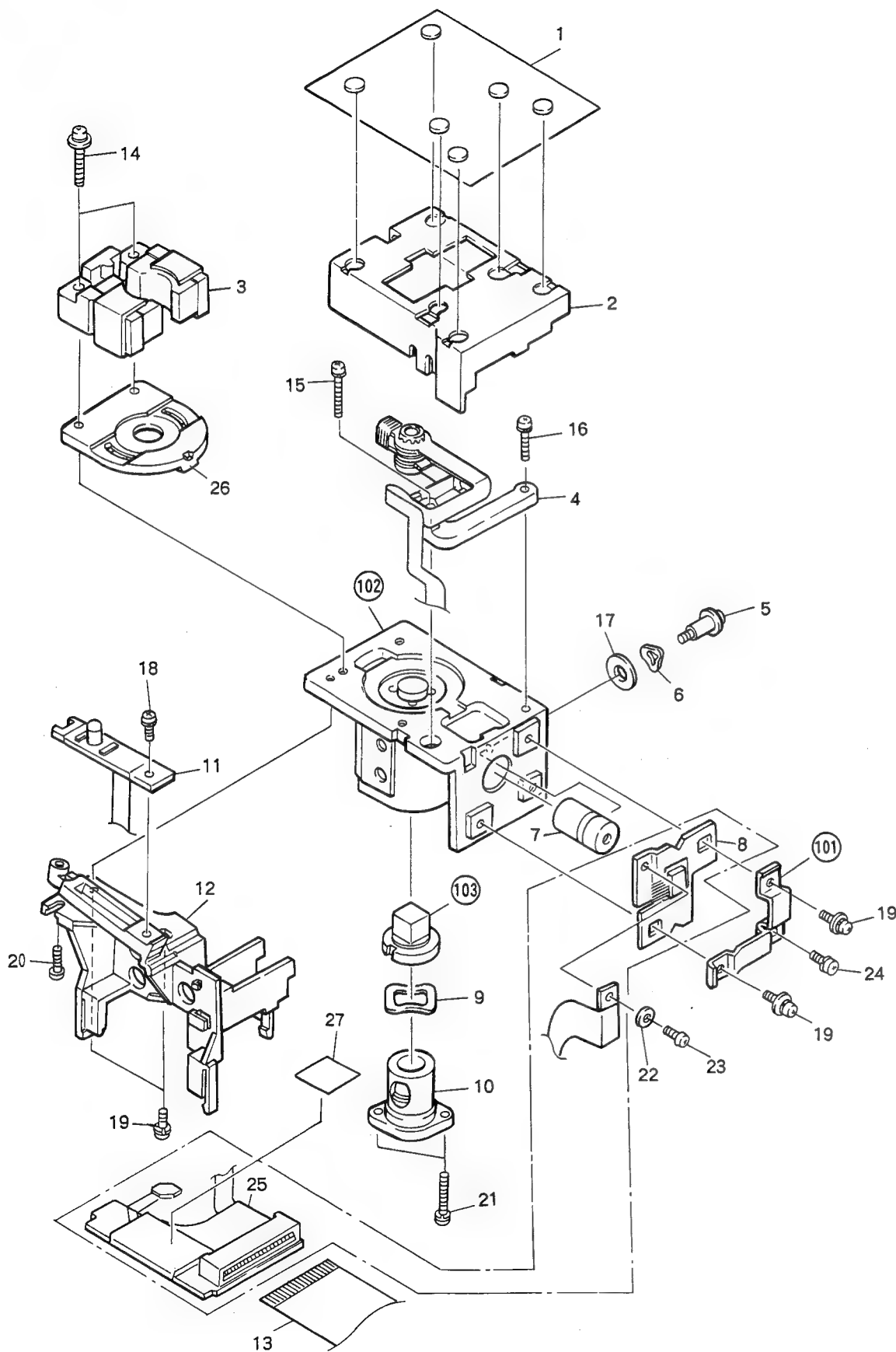
3.2.10 PICK-UP ASSEMBLY (VWY1005)

A

B

C

D



Parts List

A

B

C

D

Mark	No.	Part No.	Description
	1	VED-034	Pad
	2	VNH-057	Actuator cover
	3	VGX-063	Magnetic circuit assembly
	4	VGX-069	Objective lens assembly
	5	VLL-292	Screw 5
	6	PBE-020	Washer (A)
	7	VGX-064	Multi lens assembly
	8	VGX-065	PD assembly
	9	PBE-022	Washer (B)
	10	VGX-066	LD assembly
	11	VEX-022	Sensor assembly
	12	VNH-056	Sensor stay
	13	VDA-108	Card
	14	PBM20P120FMC	Screw
	15	PMA20P140FMC	Screw

Mark	No.	Part No.	Description
	16	PMA20P080FMC	Screw
	17	WA40F100M050	Washer
	18	PPZ20P050FMC	Screw
	19	PMB20P050FMC	Screw
	20	PBZ20P080FMC	Screw
	21	PMA26P080FMC	Screw
	22	WA20W050R050	Washer
	23	PMA20P040FMC	Screw
	24	PMA26P060FMC	Screw
	25	VWV-079	HEAD assembly
	26	VGX1005	Wave length plate assembly
	27	VEB1002	Sheet
	101		PD spring
	102		Optical body
	103		Prism assembly

INSTALLING THE HEAD ASSEMBLY

The Head assembly is supplied with the flexible parts not bent; therefore, use the following procedure to process.

1. Bend as shown by the arrow in Fig. 1 and fasten using double-sided tape and adhesive.
2. With the flexible parts bent as shown in Fig. 1, mount on the pick-up.
3. Mount the flex strip that connects the disc tilt detection PCB and the TRKG and FOCS coils on the Head assembly as shown in Fig. 2.

Note:

The copper foil of the flex strip has little resistance to heat; therefore, soldering should be performed as quickly as possible. Apply the soldering iron to the Head assembly, not to the flex strip.

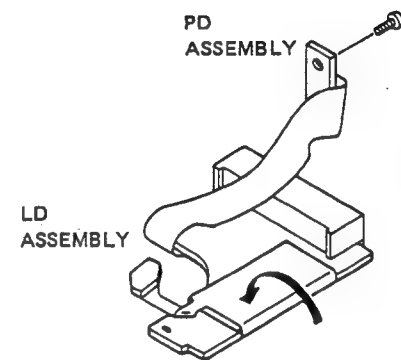


Fig. 1

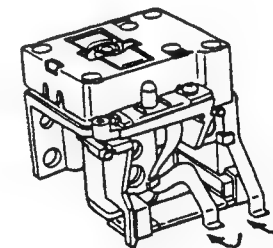
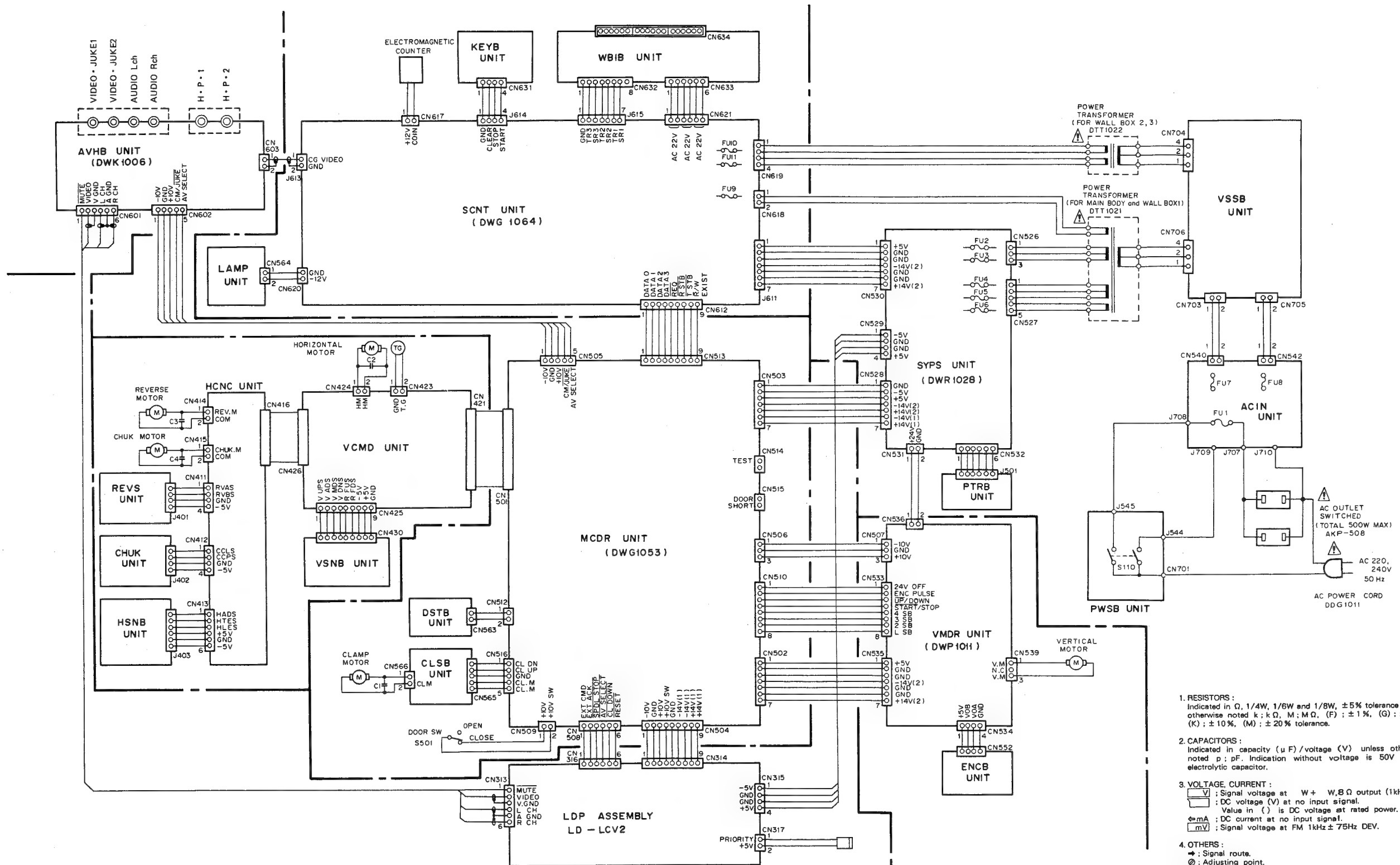


Fig. 2

3.3 SCHEMATIC DIAGRAM AND P.C. BOARDS PATTERN

3.3.1 MAIN BODY

3.3.1.1 OVERALL CONNECTION DIAGRAM



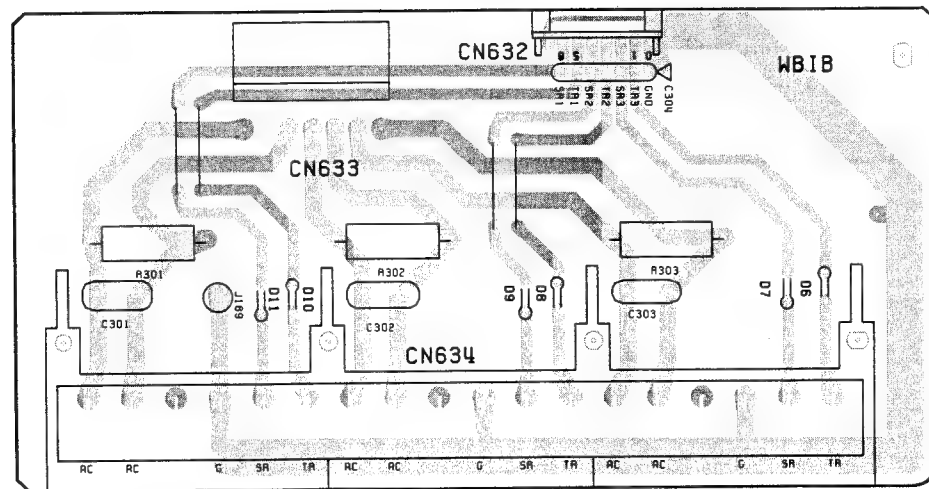
D

SCNT UNIT (DWG1064)

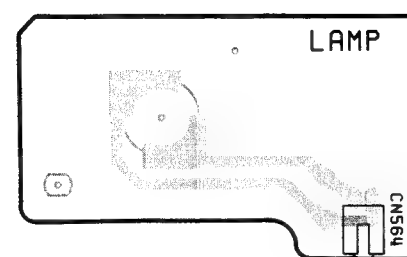
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Electrolytic capacitor (Polarized)
		Resistor array			Power capacitor
		Inductor			Semi-fixed resistor
		Coil			Resistor
		Transformer			Resonator
		Filter			Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

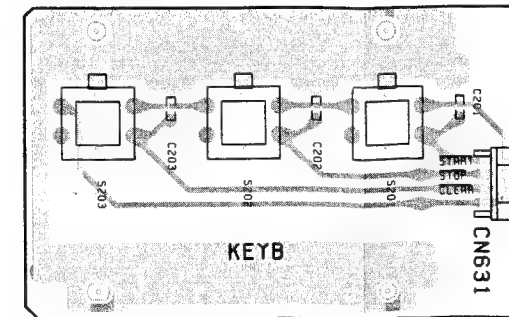
WBIB UNIT



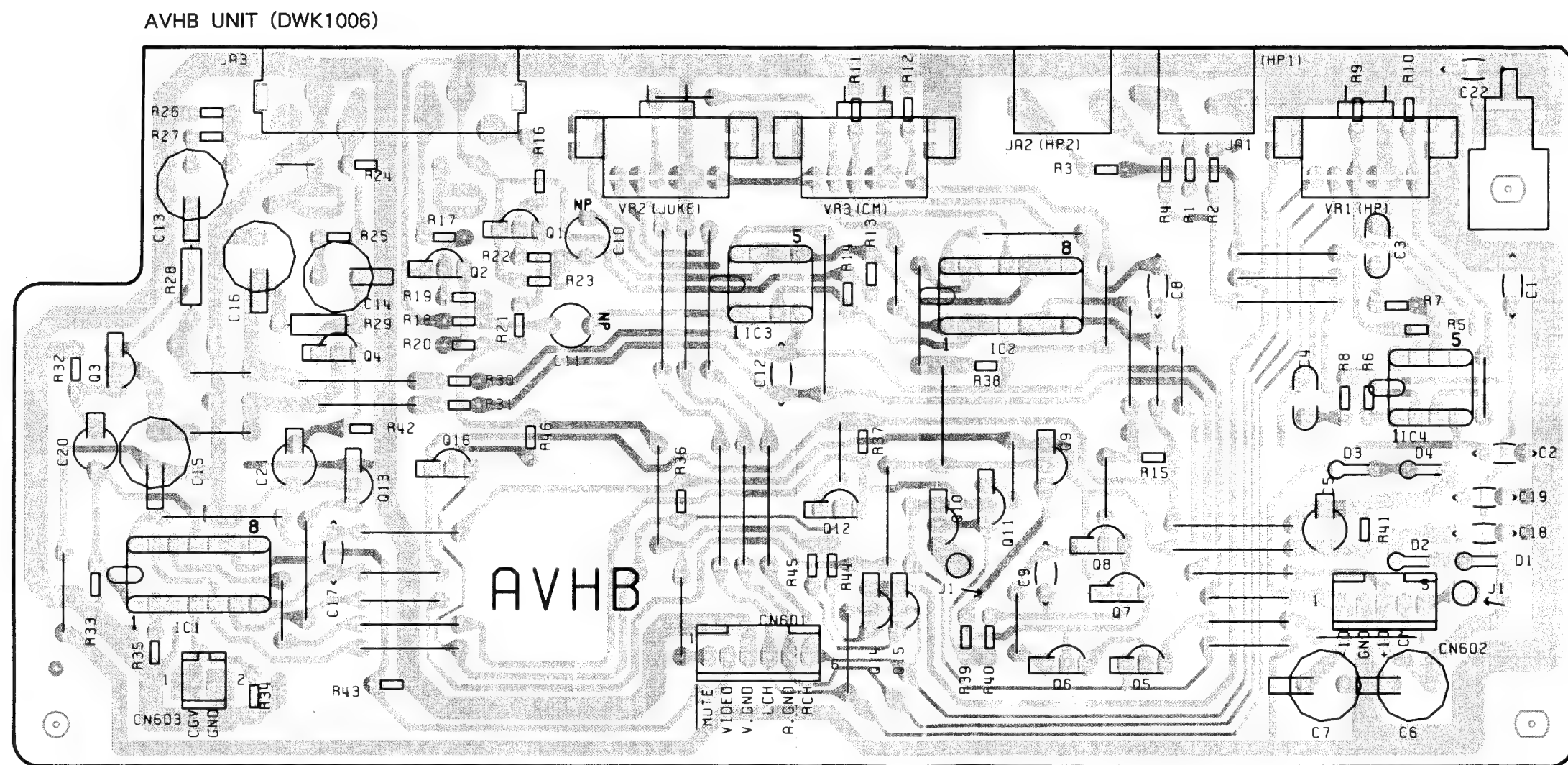
LAMP UNIT

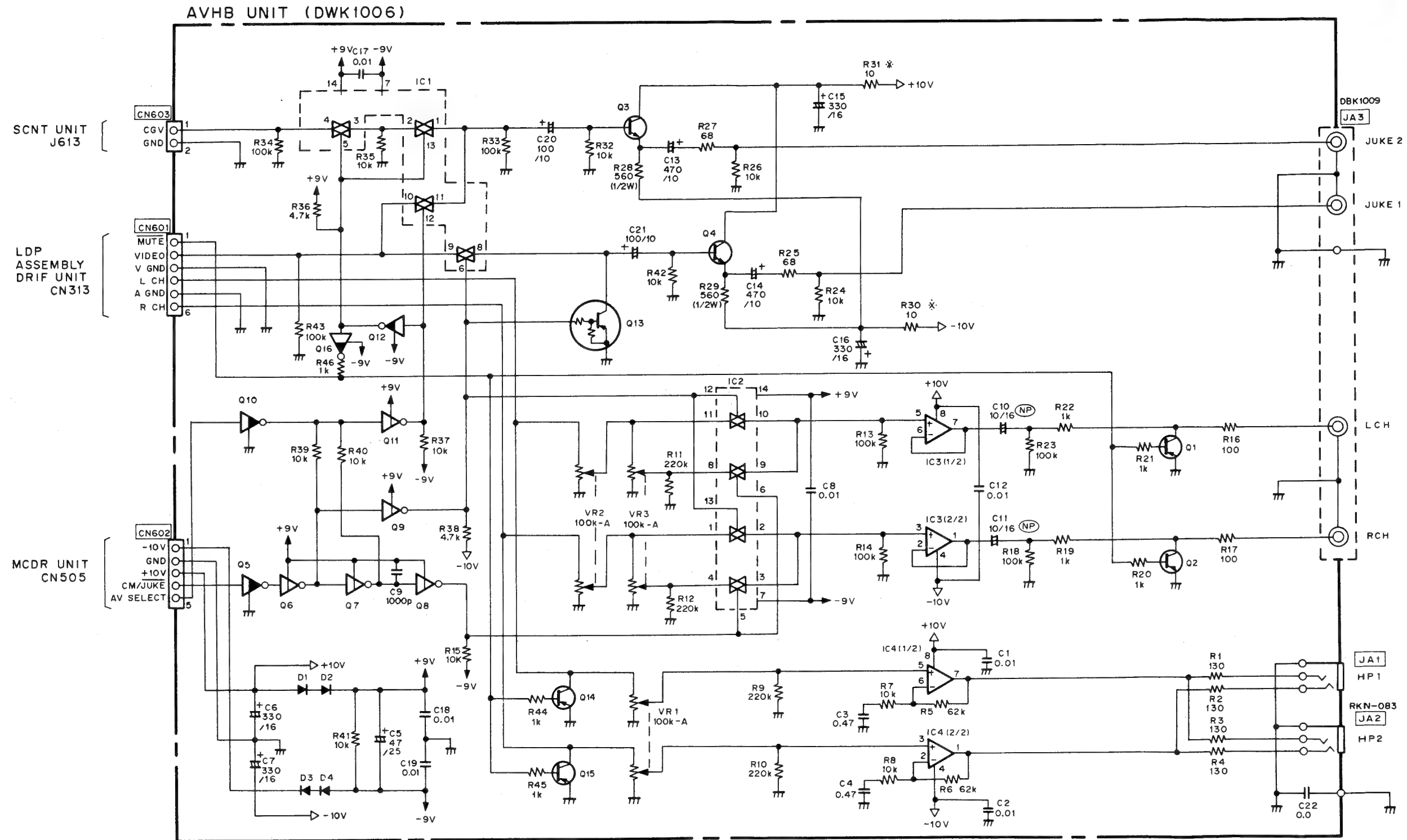


KEYB UNIT



3.3.1.3 VIDEO, AUDIO OUTPUT SECTION





IC1,2	: TC4066BP	VR1,2,3	: DCS-117
IC3	: NJM4558DX	R30, 31	: DCN1002
IC4	: NJM4556DE	Q16	: DTC144WS
Q1,2,14,15	: 2SA933S		
Q3,4	: 2SC3581		
Q5,10,12	: DTC124ES		
Q6~9,11,13	: DTA124ES		
D1~4	: ISS254		

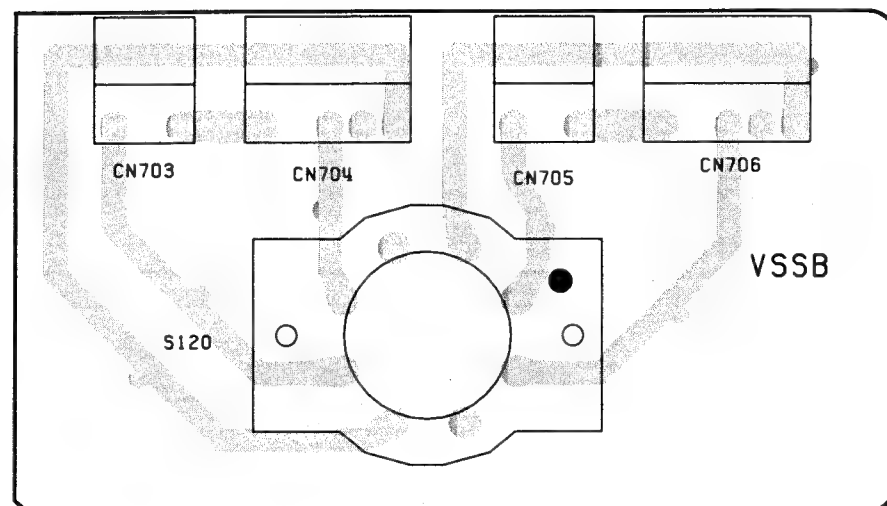
6



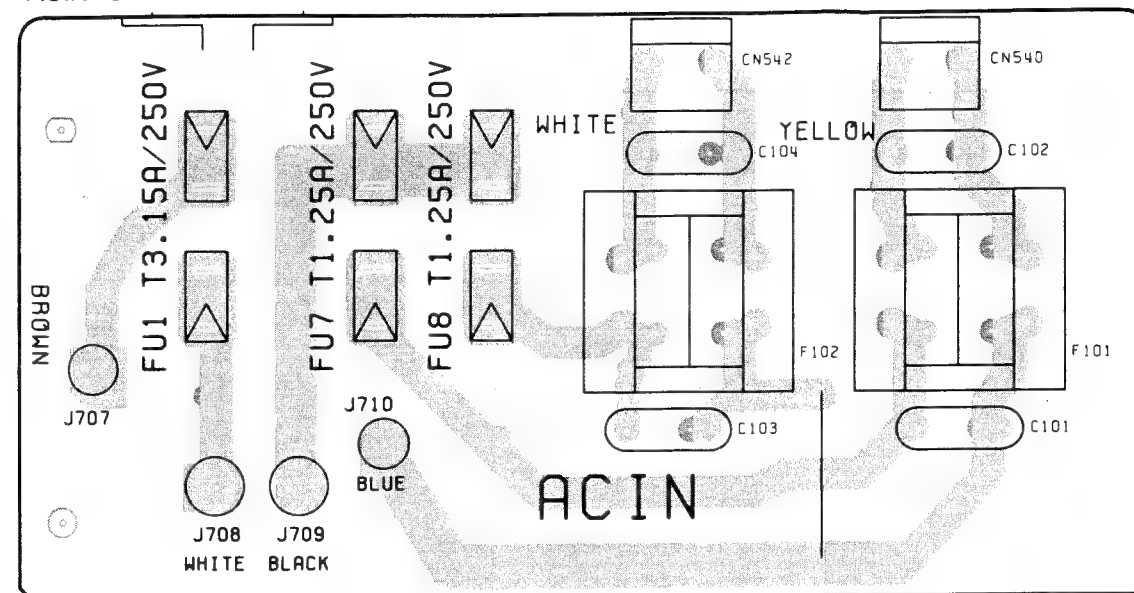
A

B

VSSB UNIT



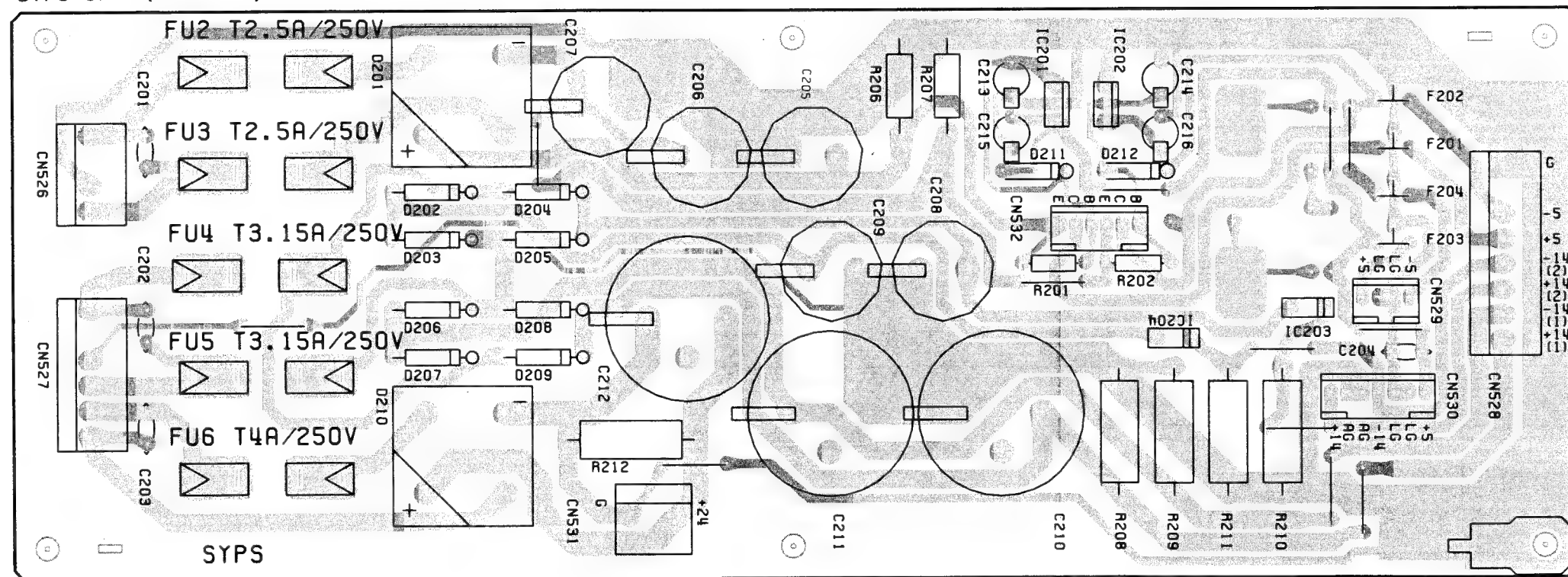
ACIN UNIT



A

B

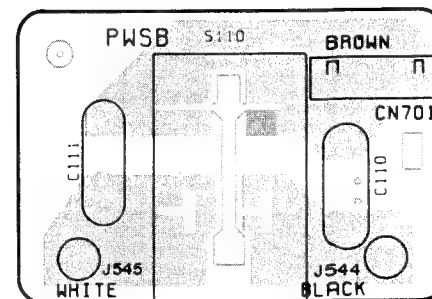
SYPS UNIT (DWR1028)



C

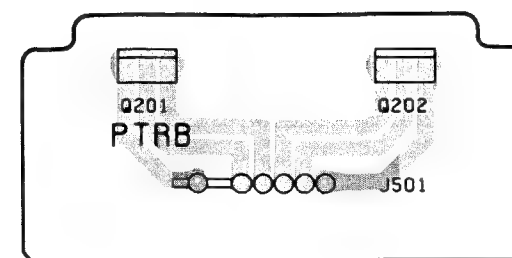
D

PWSB UNIT



C

PTRB UNIT



D

1

2

3

4

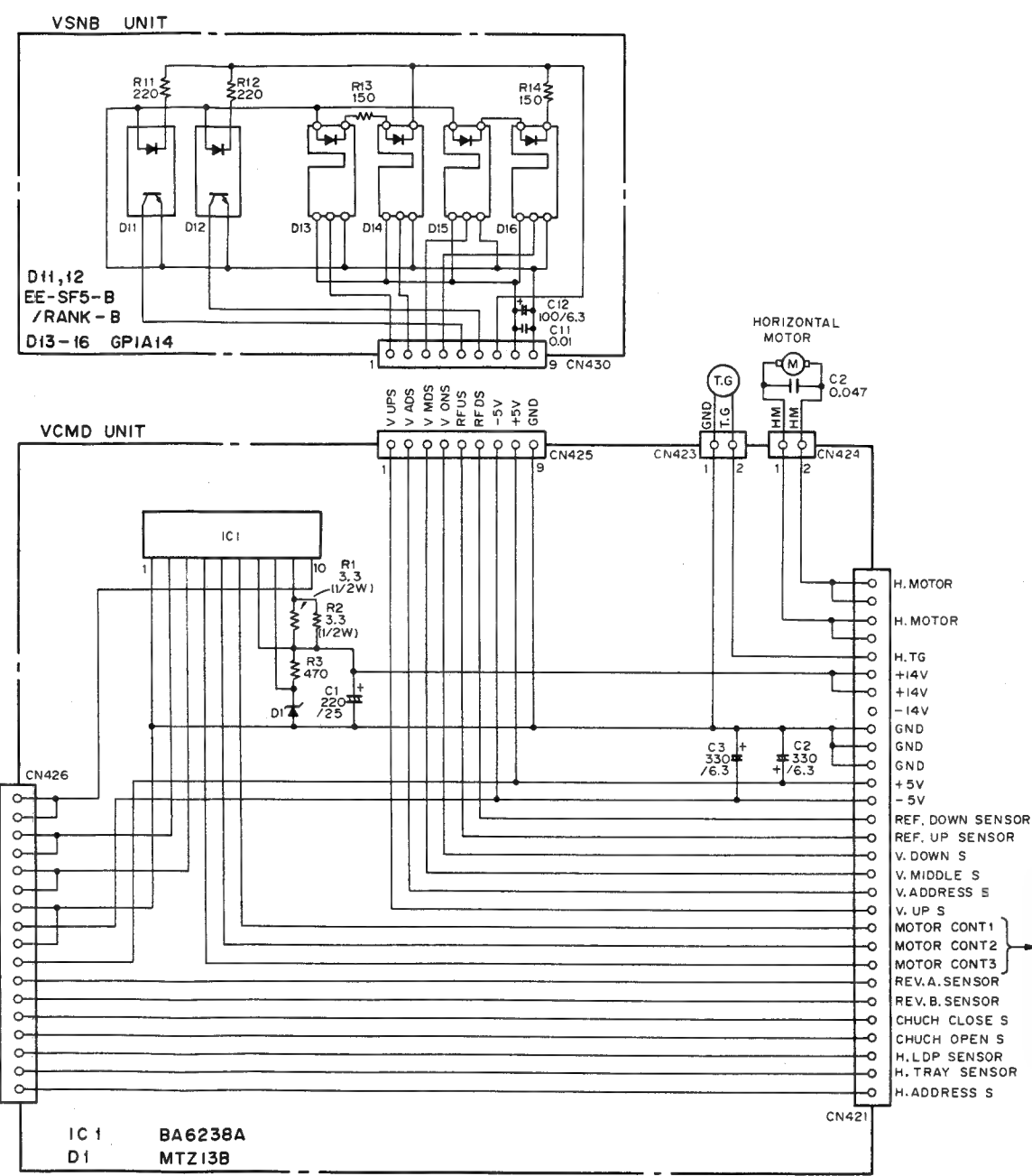
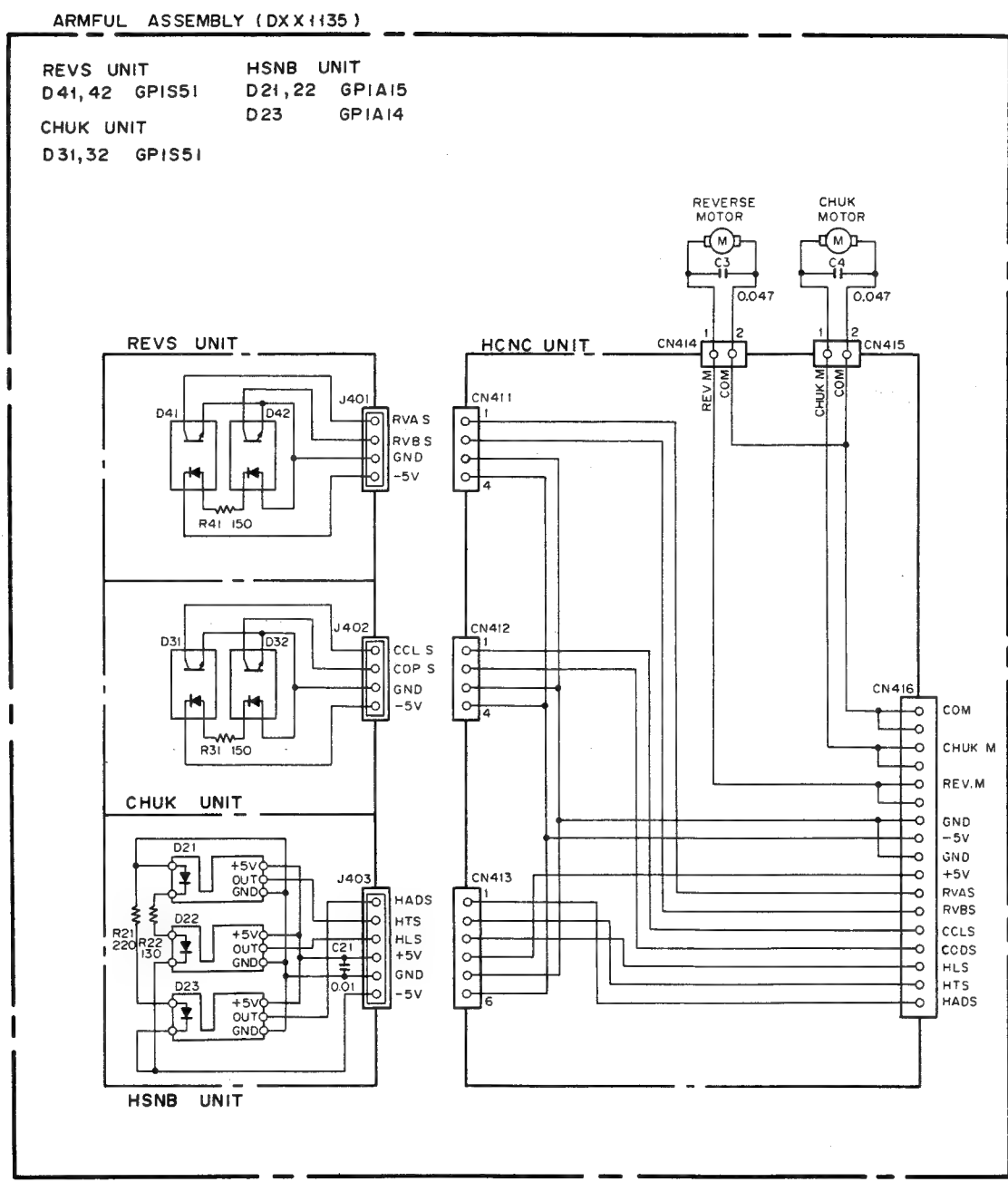
5

6



3.3.1.6 VH BASE SECTION

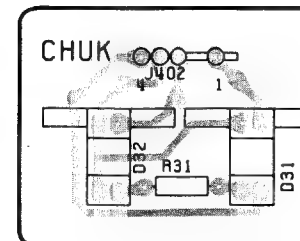
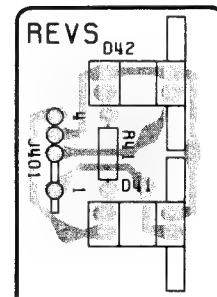
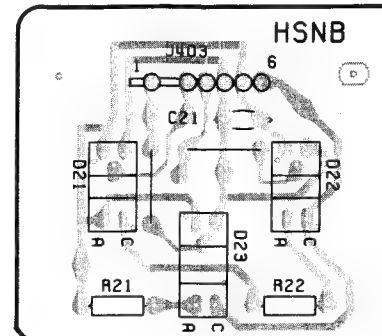
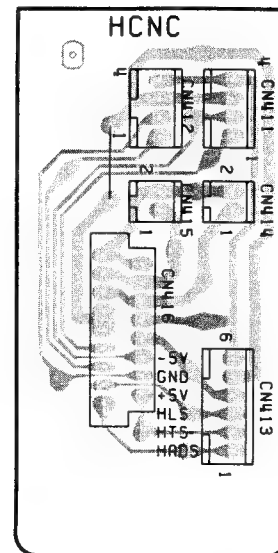
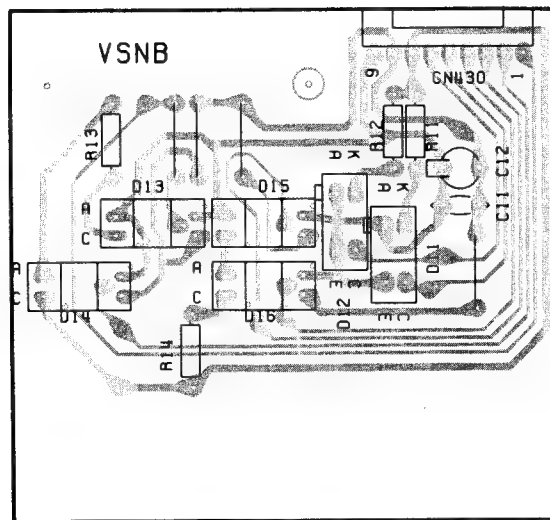
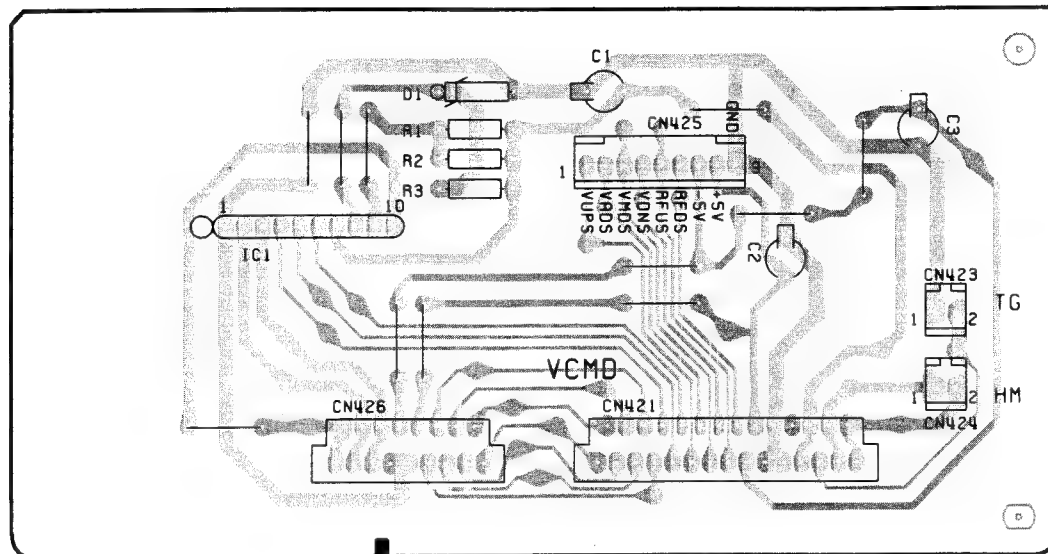
A
B
C
D



CHUK	REVERSE	MOTOR CONT
		1 2 3
STOP	STOP	H H H
OPEN	STOP	H L H
CLOSE	STOP	L L H
STOP	A → B	H H L
STOP	B → A	L H L
STOP	STOP	L H H
STOP	STOP	H L L

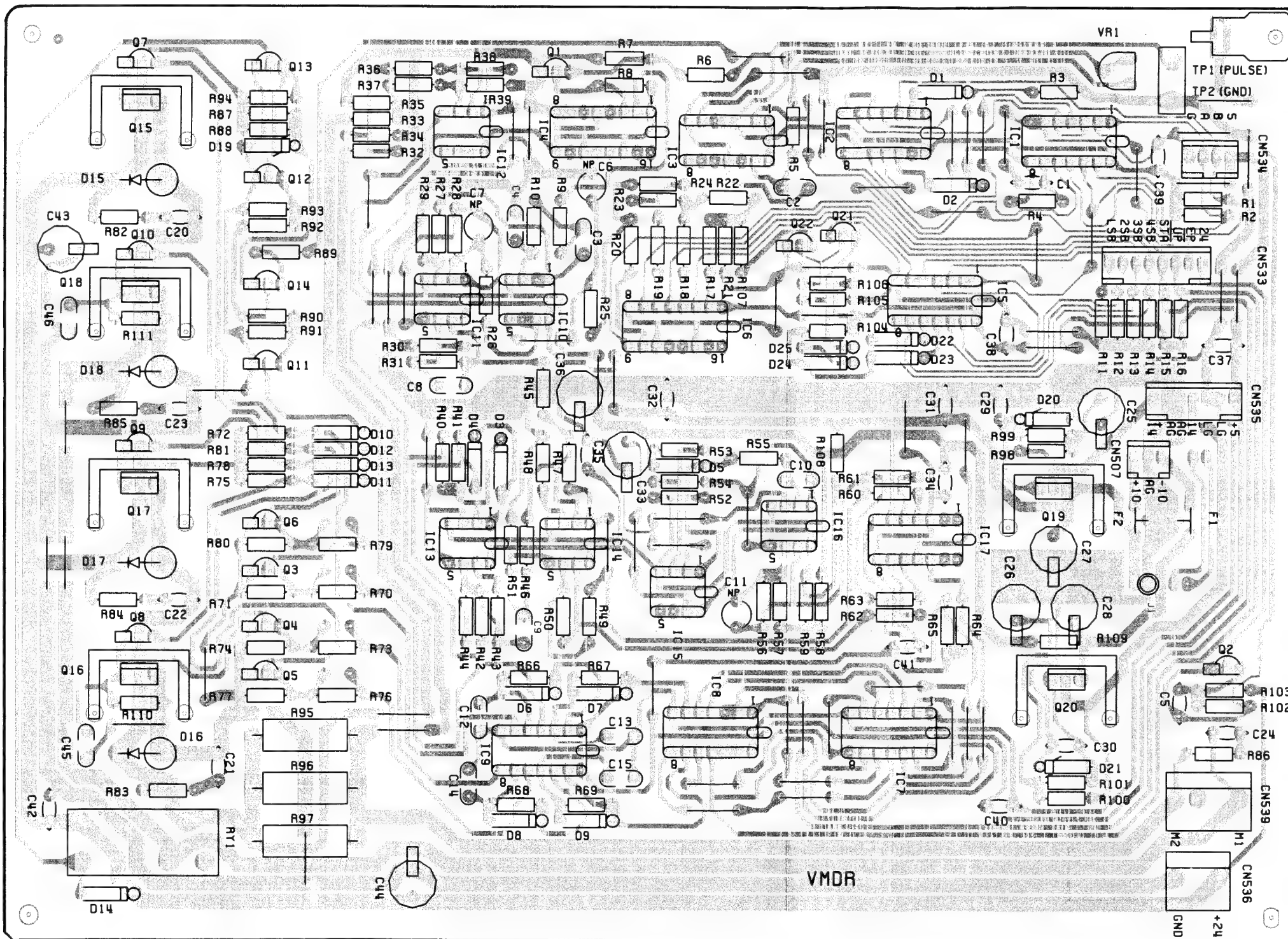
A
B
C
D

VCMD UNIT

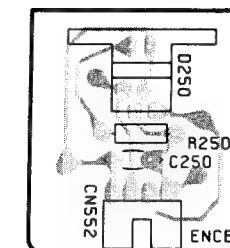


3.3.1.7 VERTICAL MOTOR CONTROL SECTION

VMODR UNIT (DWP1011)



ENCB UNIT



A

B

C

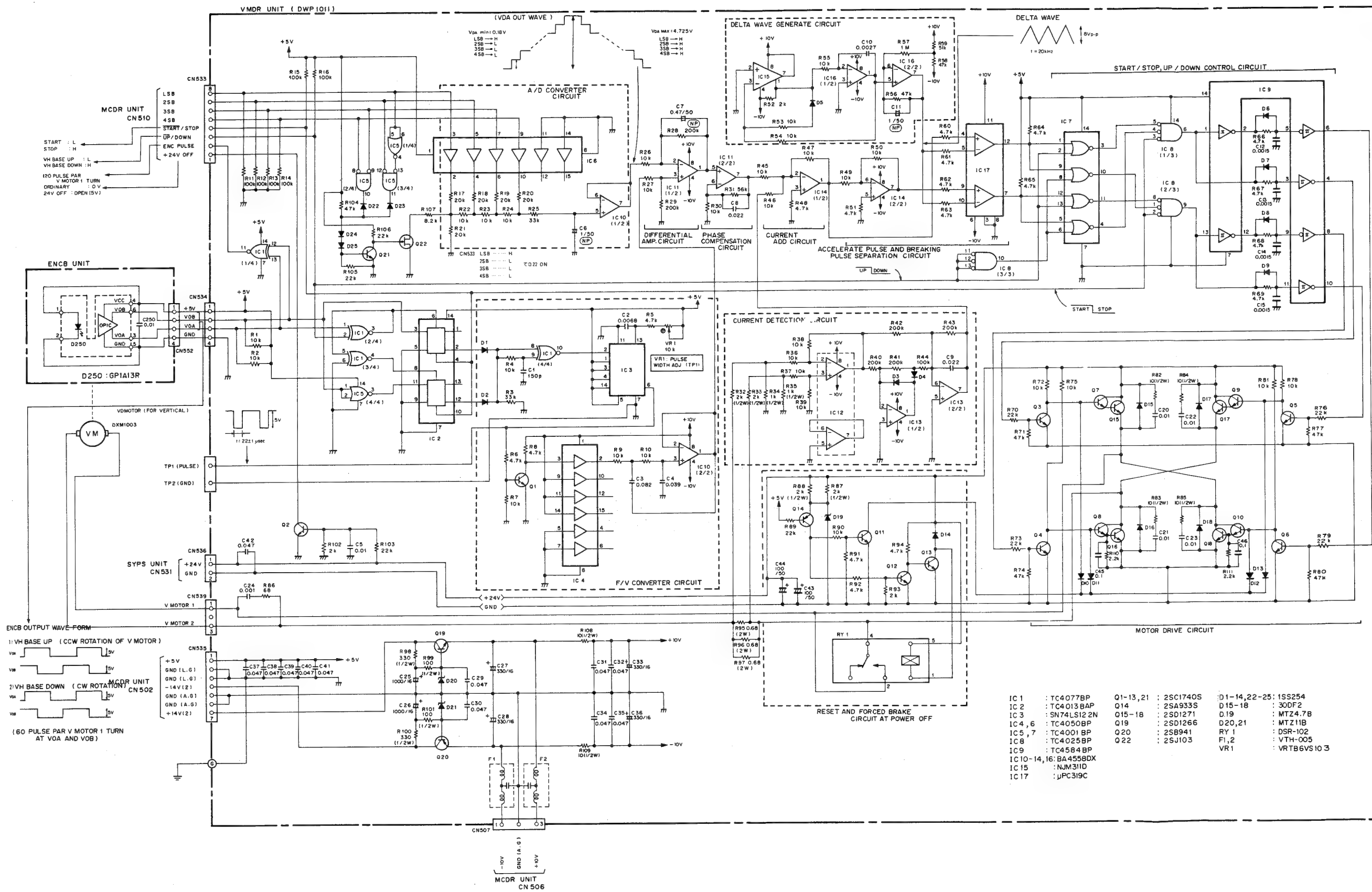
D

A

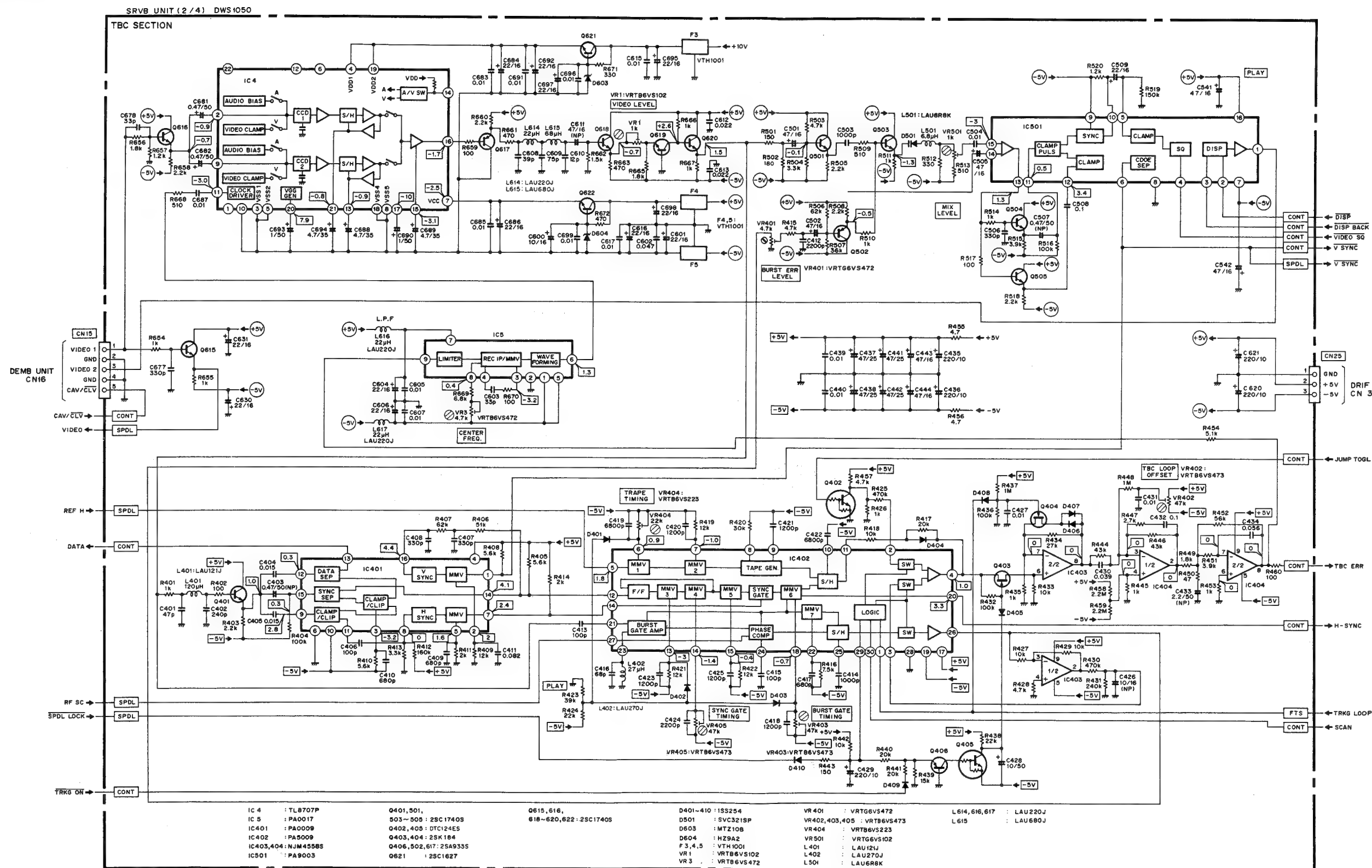
B

C

D

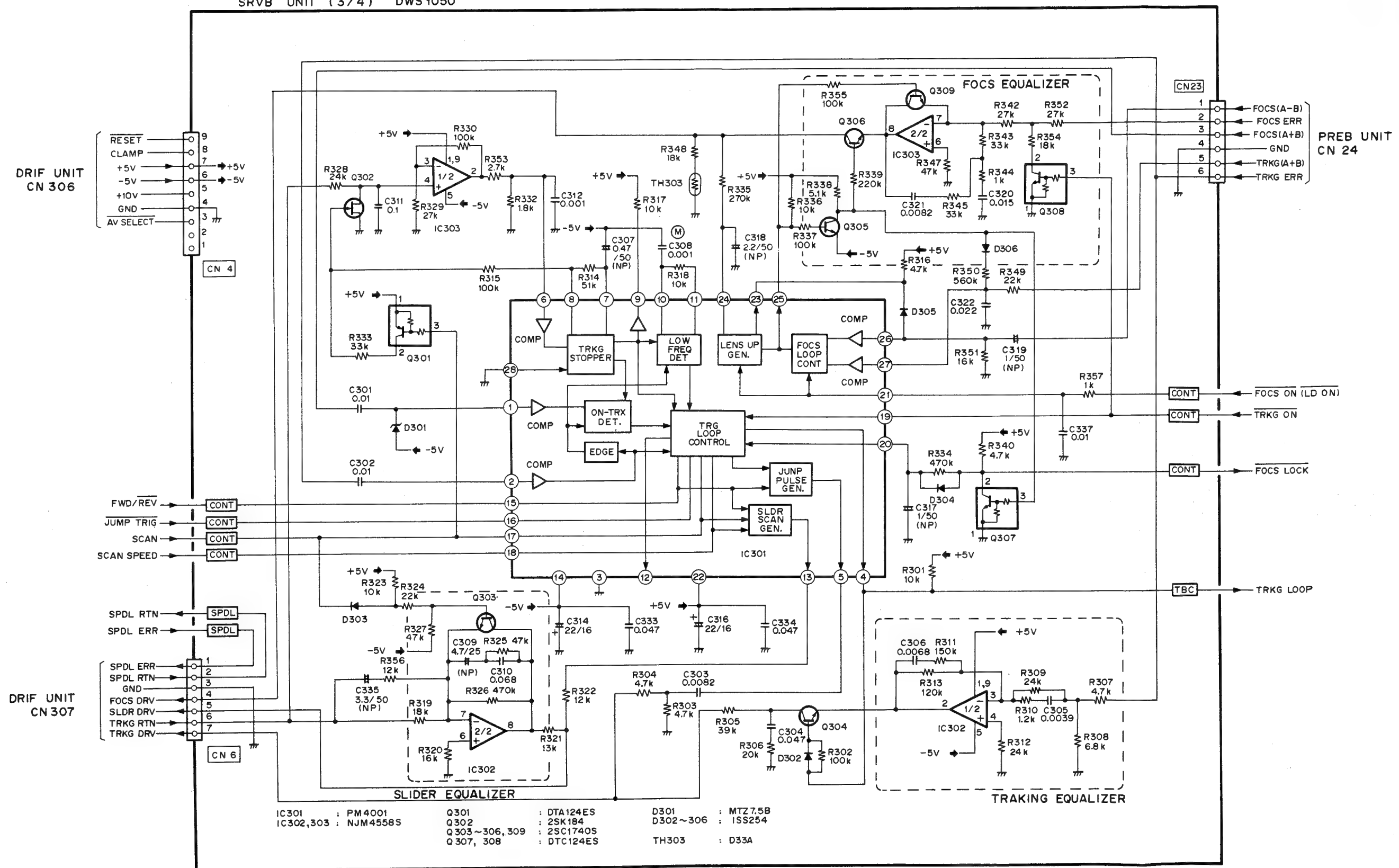


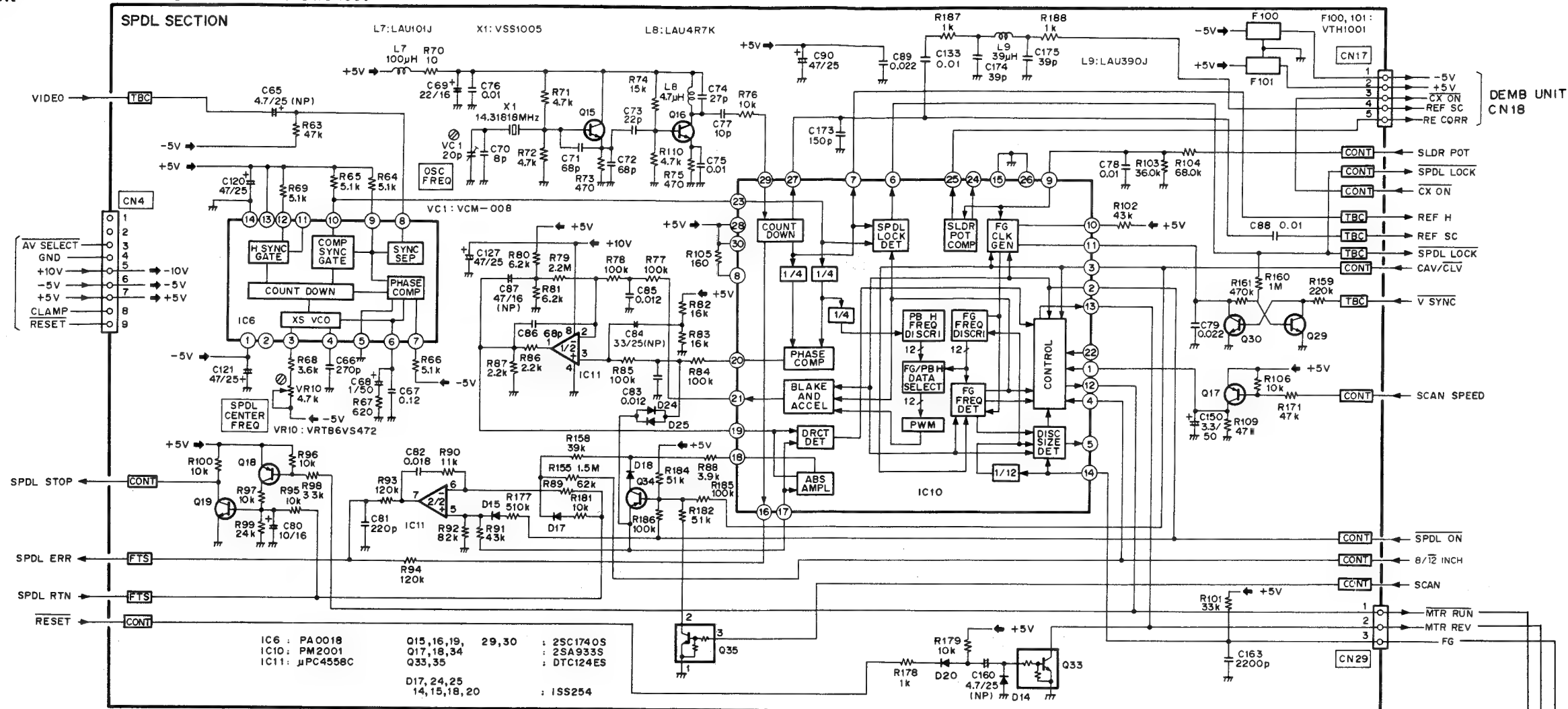
3.3.2.2 TBC SECTION



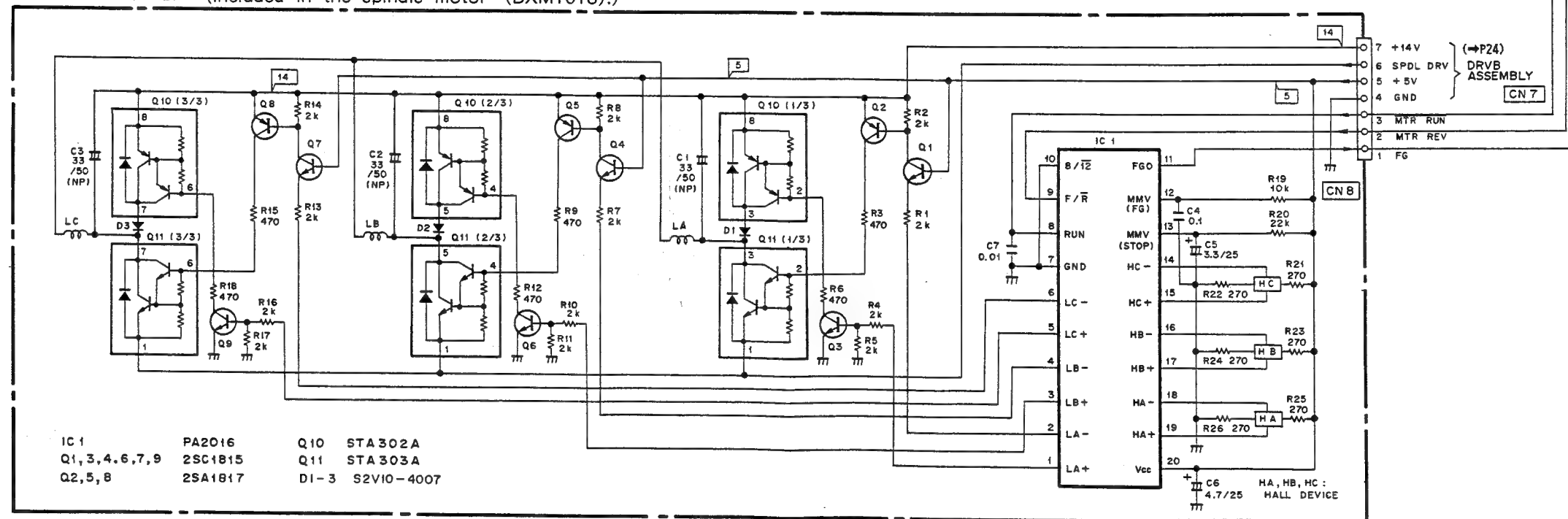
3.3.2.3 FTS SECTION

SRVB UNIT (3/4) DWS1050

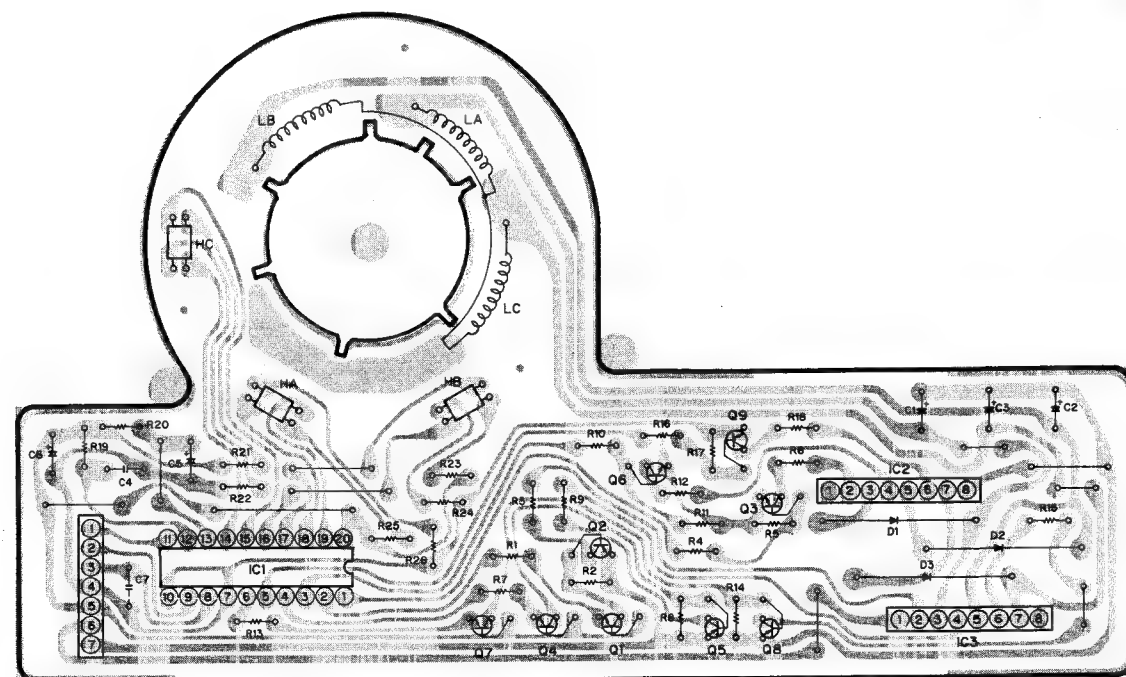




BLMB ASSEMBLY (Included in the spindle motor (DXM1018).)

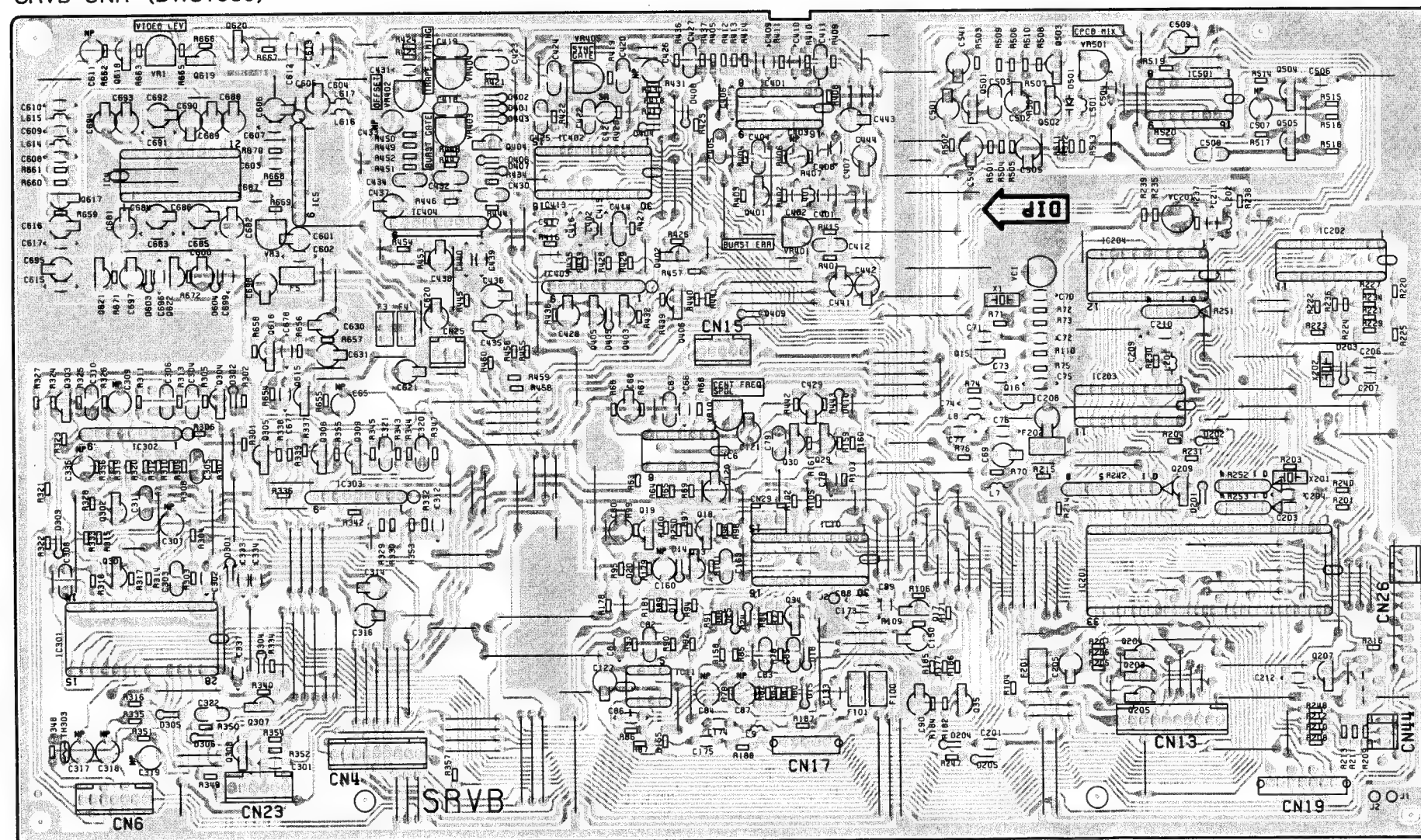


IC, Q IC1 Q7 Q4 Q2 Q1 Q6 Q5 Q9 Q3 Q8 IC2 IC3

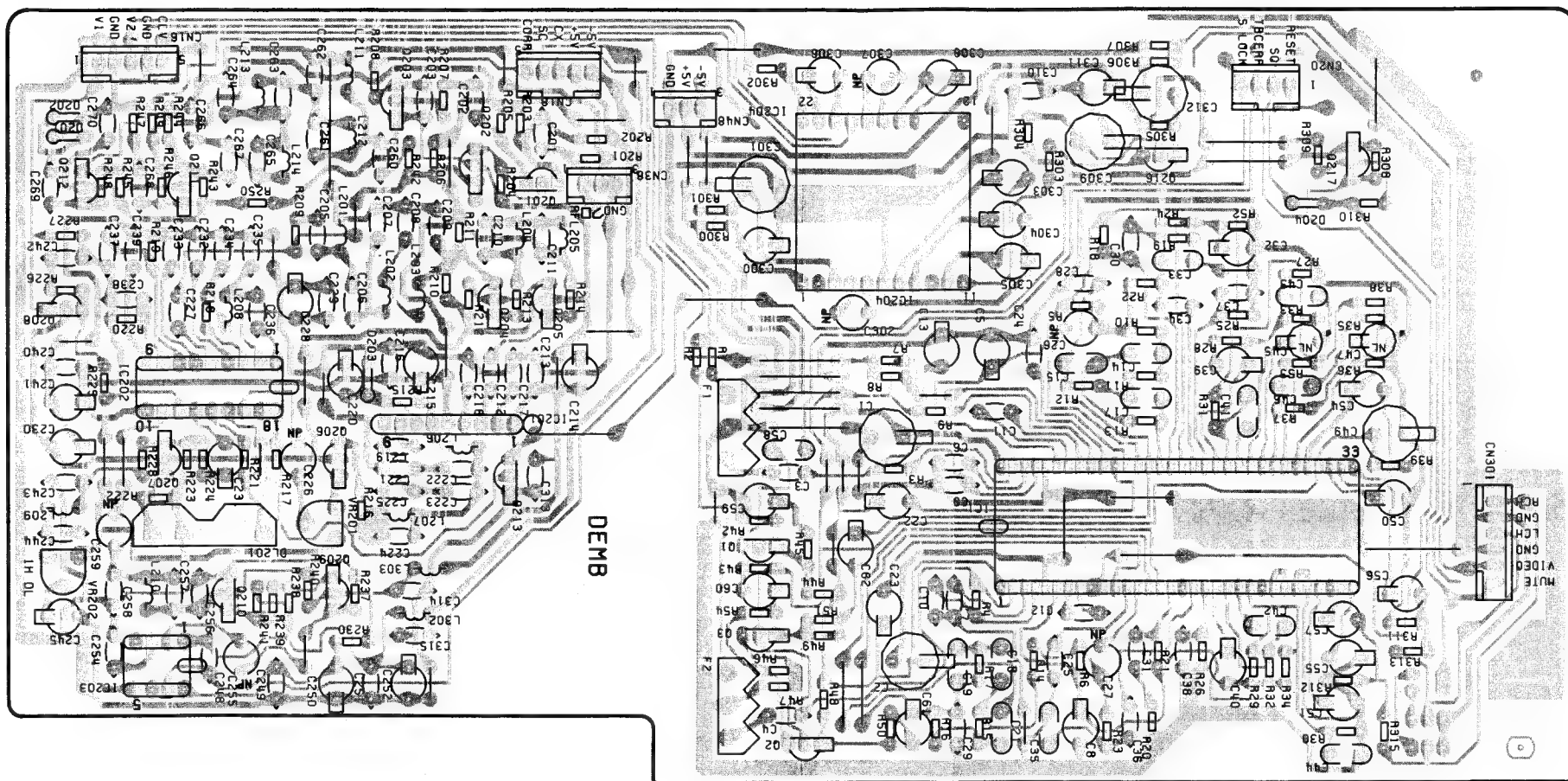


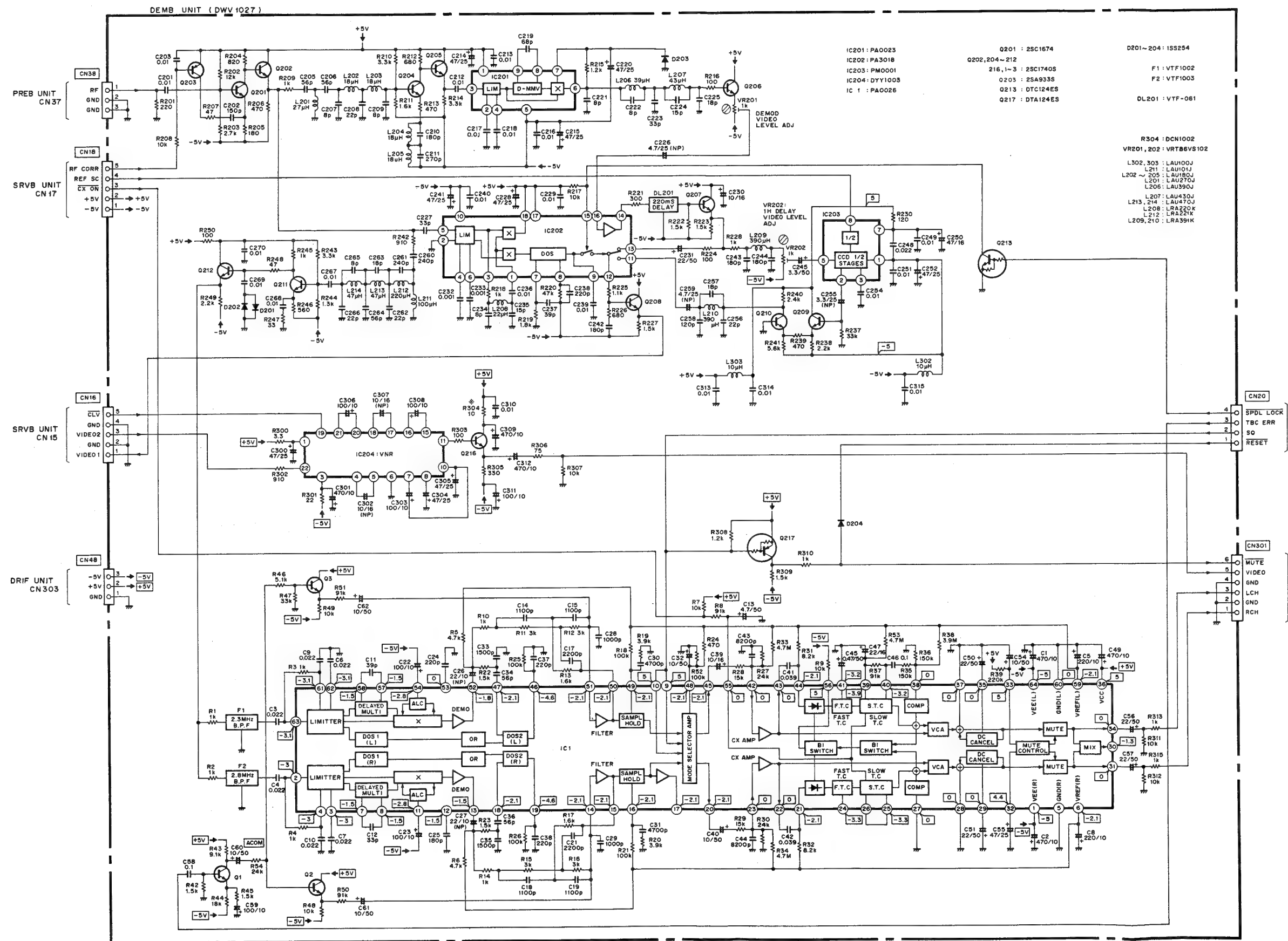
BLMB UNIT

SRVB UNIT (DWS1050)

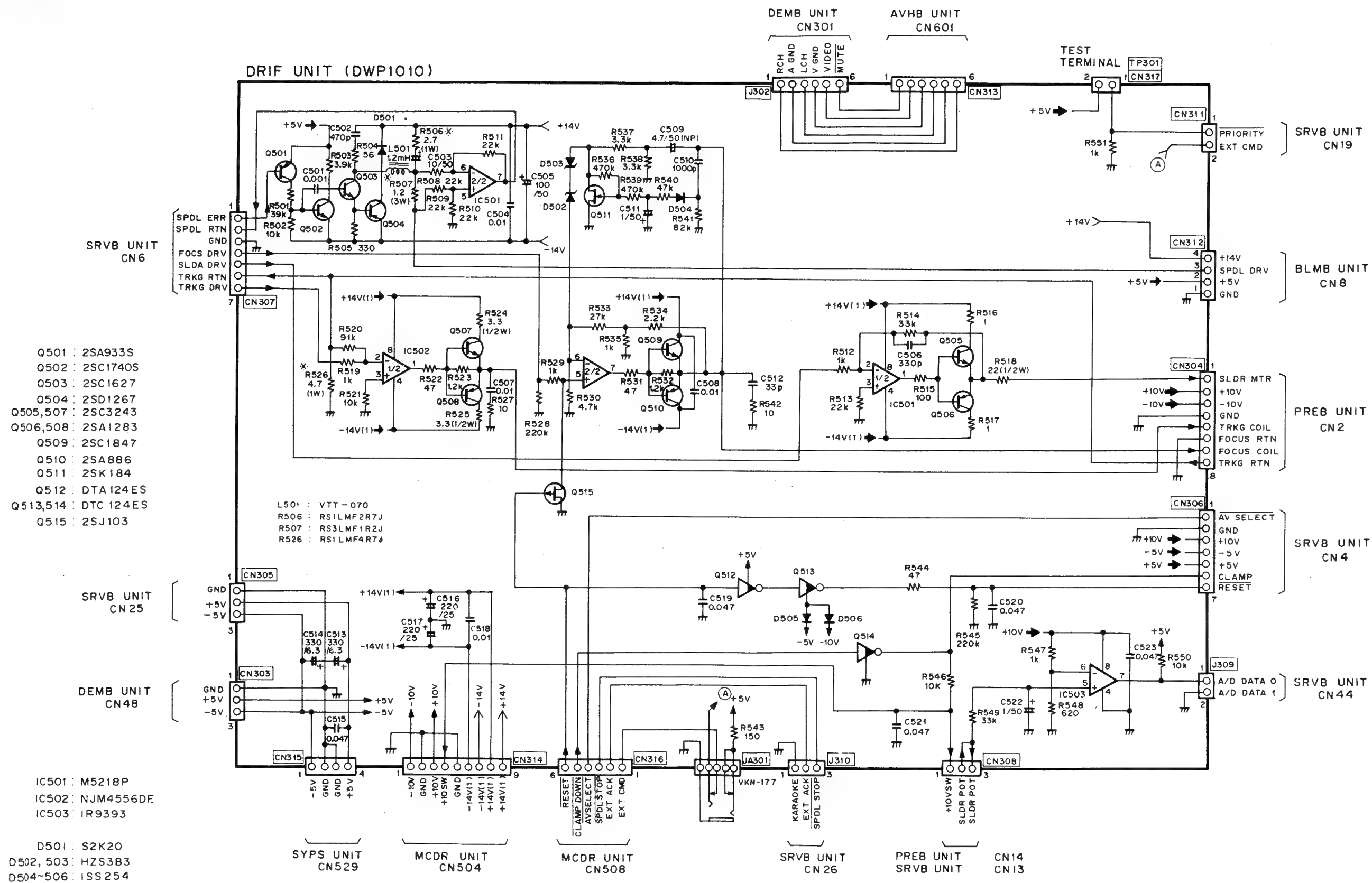


DEMB UNIT (DWV1027)

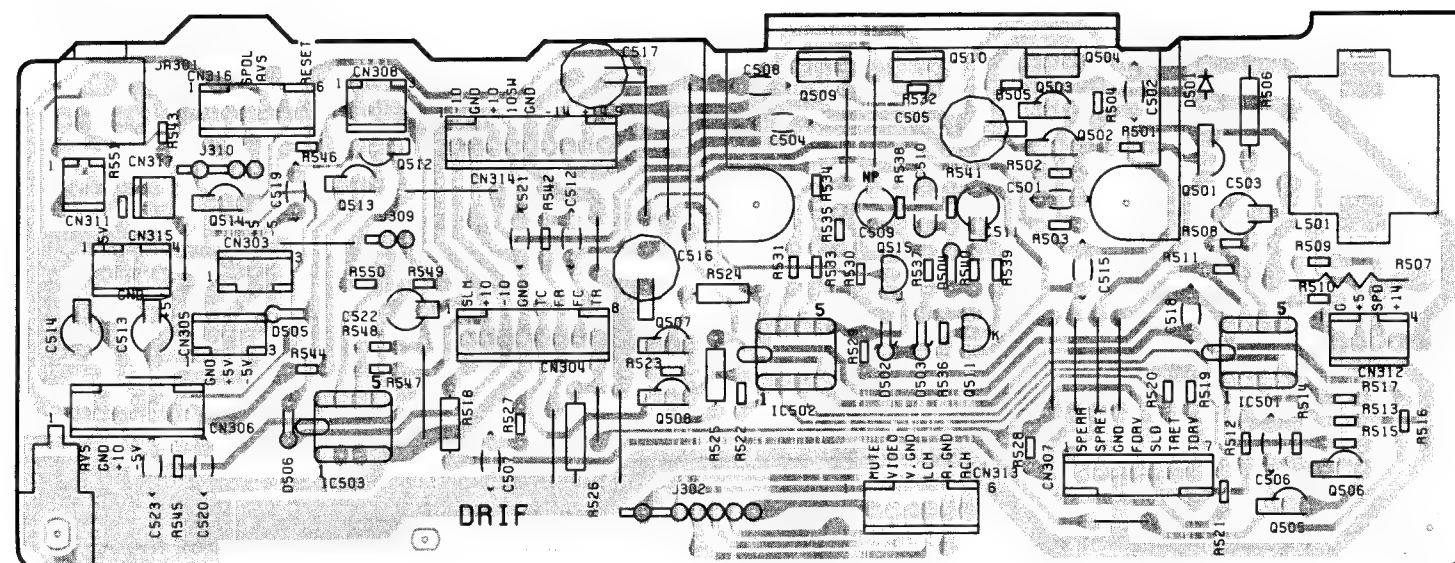




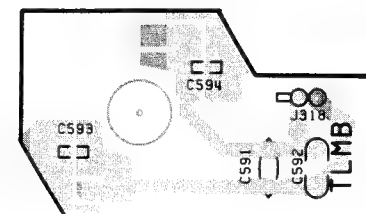
3.3.2.6 DRIF UNIT



DRIF UNIT (DWP1010)

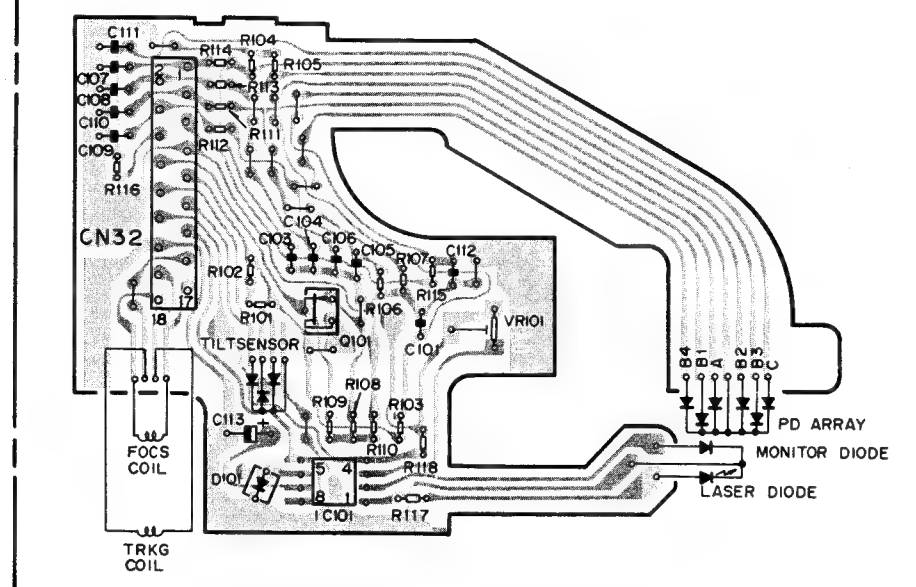


PREB UNIT (DWV1009)

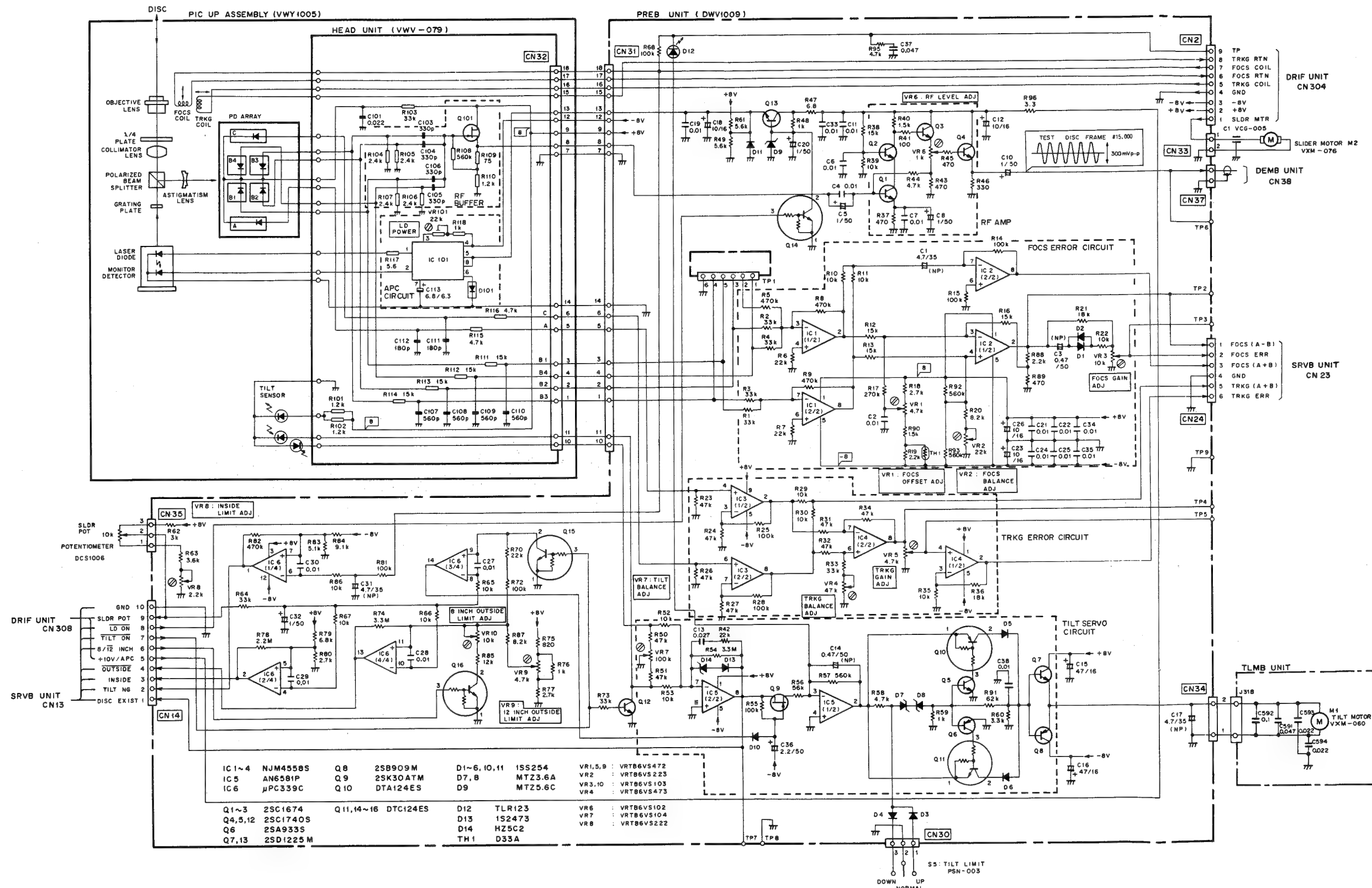


HEAD UNIT (VWV - 079)

Q101 IC101



SCHEMATIC DIAGRAM OF MECHANISM SECTION



3.4 ELECTRICAL PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
560 Ω \rightarrow 56 \times 10¹ \rightarrow 561 RD1/4PS $\overline{561}$ J
47k Ω \rightarrow 47 \times 10³ \rightarrow 473 RD1/4PS $\overline{473}$ J
0.5 Ω \rightarrow 0R5 RN2H $\overline{0R5}$ K
1 Ω \rightarrow 010 RS1P $\overline{010}$ K
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω \rightarrow 562 \times 10¹ \rightarrow 5621 RN1/4SR $\overline{5621}$ F
● The part number of the semiconductors and the pioneer exclusive use parts are not mentioned.
Their are mentioned in the schematic diagrams.

3.4.1 Main body unit

[Laser juke box system control section]

Mark	Symbol & Description	Part No.
⊙	SCNT unit KEYB unit WBIB unit LAMP unit	DWG1064

[Video · Audio output terminal section]

Mark	Symbol & Description	Part No.
⊙	AVHB unit	DWK1006

[Power supply section]

Mark	Symbol & Description	Part No.
⊙	SYPS unit PTRB unit ACIN unit PWSB unit VSSB unit	DWR1028

[Changer control section]

Mark	Symbol & Description	Part No.
⊙	MCDR unit CLSB unit DSTB unit	DWG1053

[VH base section (Except armful assembly (DXX1135))]

Mark	Symbol & Description	Part No.
	VCMD unit VSNB unit	

[Armful assembly section (DXX1135)]

Mark	Symbol & Description	Part No.
	HCNC unit HSNB unit REVS unit CHUK unit	

[Vertical motor control section]

Mark	Symbol & Description	Part No.
⊙	VMDR unit ENCB unit	DWP1011

3.4.2 Laser juke box system control section

⊙ SCNT unit (DWG1064)

CAPACITORS

Mark	Symbol & Description	Part No.
	C35, C40 (100p \times 8) C5, C6 C3 C1, C2 C7	DCG-106 CCCC180J50 CCCC270J50 CCCSL330J50 CEANP010M50

	C13, C14, C17 C16 C15 C12 C8 - C10	CEAS221M25 CEAS102M16 CEAS331M16 CEAS332M6R3 CEAS470M25
--	--	---

	C11, C31 C18, C21 - C30, C32 - C34, C37, C45 C36, C38, C39, C41 - C44 C19, C20, C46 (1000p \times 8)	CKCYB102K50 CKCYF473Z50 CKCYB331K50 DCG-105
--	---	--

RESISTORS

Mark	Symbol & Description	Part No.
	R1 - R3 Resistor array (10k \times 8) R4 - R6 Resistor array (4.7k \times 8) Other resistors	DCN1009 RA8S472J RD1/6PM $\square\square\square$ J

KEYB unit

CAPACITORS

Mark	Symbol & Description	Part No.
	C201 - C203	CKPUYF223Z25

WBIB unit

CAPACITORS

Mark	Symbol & Description	Part No.
	C304 (1000p \times 6) C301 - C303 (0.01)	DCG-107 RDG-008

LAMP unit

Electrical parts are not supplied in this unit.

3.4.3 Video · Audio output terminal section

⊙ AVHB unit (DWK1006)

CAPACITORS

Mark	Symbol & Description	Part No.
	C10, C11 C20, C21 C6, C7, C15, C16 C5 C13, C14	CEANP100M16 CEAS101M10 CEAS331M16 CEAS470M25 CEAS471M10
	C3, C4 C9 C1, C2, C8, C12, C17 - C19, C22	CFTXA474J50 CKCYB102K50 CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	VR1 - VR3 Semi-fixed (100k) R28, R29 R30, R31 (10) Other resistors	DCS-117 RD1/2PM561J DCN1002 RD1/6PM $\square\square\square$ J

3.4.4 Power supply section

⊙ SYPS unit (DWR1028)

CAPACITORS

Mark	Symbol & Description	Part No.
	C213 - C216 C209 C206, C207 C201 - C204 C208	CEAS2R2M50 CEAS332M25 CEAS472M16 CKCYF473Z50 CEAS222M25
	C205 C210, C211 (3300/35) C212 (6800/35)	CEAS682M16 DCH1001 DCH1003

RESISTORS

Mark	Symbol & Description	Part No.
	R206, R207 R208 - R212 R201, R202	RS1LF391J RS2LF $\square\square\square$ J RD1/4PM $\square\square\square$ J

PTRB unit

The part number of the service parts are mentioned to the schematic diagram.

ACIN unit

CAPACITORS

Mark	Symbol & Description	Part No.
Δ	C101 - C104 (0.01)	VCG-048

PWSB unit

CAPACITORS

Mark	Symbol & Description	Part No.
Δ	C110, C111 (0.01)	VCG-048

VSSB unit

The part number of the service parts are mentioned to the schematic diagram.

3.4.5 Changer control section

⊙ MCDR unit (DWG1053)

CAPACITORS

Mark	Symbol & Description	Part No.
	C9, C10 C3 C6 C5 C2	CCCSL300J50 CEAS101M50 CEAS102M25 CEAS220M50 CEAS221M25
	C4 C14 C11, C12, C15 - C21 C13 C7, C8	CEAS331M6R3 CFTXA224J50 CGCYX473M25 CKCYB102K50 CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R1 - R3 (10k) R4, R5 Other resistors	DCN1009 RS2LMFR47J RD1/6PM $\square\square\square$ J

CLSB unit

The part number of the service parts are mentioned to the schematic diagram.

DTSB unit

The part number of the service parts are mentioned to the schematic diagram.

3.4.6 VH base section (Except armful assembly (DXX1135))

VCMD unit**CAPACITORS**

Mark	Symbol & Description	Part No.
	C1	CEAS221M25
	C2,C3	CEAS331M6R3

RESISTORS

Mark	Symbol & Description	Part No.
	R1,R2	RD1/2PMF3R3J
	R3	RD1/4PM471J

VSNB unit**CAPACITORS**

Mark	Symbol & Description	Part No.
	C12	CEAL101M6R3
	C11	CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R11 - R14	RD1/4PM□□□J

3.4.7 Armful assembly section (DXX1135)

HCNC unit

Electrical parts are not supplied in this unit.

HSNB unit**CAPACITOR**

Mark	Symbol & Description	Part No.
	C21	CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R21,R22	RD1/4PM□□□J

REVS unit**RESISTOR**

Mark	Symbol & Description	Part No.
	R41	RD1/4PM151J

CHUK unit**RESISTOR**

Mark	Symbol & Description	Part No.
	R31	RD1/4PM151J

3.4.8 Vertical motor control section

◎ VMDR unit (DWP1011)

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CCCSL151J50
	C7	CEANPR47M50
	C6,C11	CEANP010M50
	C43,C44	CEAS101M50
	C25,C26	CEAS102M16
	C27,C28,C33,C36	CEAS331M16
	C24	CKCYB102K50
	C5,C20 - C23	CKCYF103Z50
	C29 - C32,C34,C35,C37 - C42	CKCYF473Z50
	C45,C46	CQMA104J50
	C12 - C15	CQMA152J50
	C8,C9	CQMA223J50
	C10	CQMA272J50
	C4	CQMA393J50
	C2	CQMA682J50
	C3	CQMA823J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR1 Semi-fixed (10kΩ)	VRTB6VS103
	R82 - R85,R108,C109	RD1/2PMF100J
	R32 - R35,R87,R88,R98 - R101	RD1/2PM□□□J
	R17 - R24,R53 - R55,R107	RN1/4PQ□□□□F
	R95 - R97	RS2LFR68J
	Other resistors	RD1/4PM□□□J

ENCB unit**CAPACITOR**

Mark	Symbol & Description	Part No.
	C250	CKCYF103Z50

RESISTOR

Mark	Symbol & Description	Part No.
	R250	RD1/4PM221J

3.4.9 LDP assembly (DXX1170)

Mark	Symbol & Description	Part No.
●	SRVB unit	DWS1050
	BLMB unit	
●	DEMB unit	DWV1027
●	DRIF unit	DWP1010
	PREB unit	DWV1009
	TLMB unit	
	HEAD unit	

● SRVB unit (DWS1050)

CAPACITORS

Mark	Symbol & Description	Part No.
	C70	CCCCH080D50
	C77,C209,C211	CCCCH100D50
	C610	CCCCH120J50
	C73	CCCCH220J50
	C74	CCCCH270J50
	C603,C678	CCCCH330J50
	C174,C175,C608	CCCCH390J50
	C401	CCCCH470J50
	C71,C72,C86,C416	CCCCH680J50
	C406,C413,C415	CCCSL101J50
	C173,C206,C207	CCCSL151J50
	C81	CCCSL221J50
	C402	CCCSL241J50
	C66	CCCSL271J50
	C203,C204	CCCSL300J50
	C407,C408,C506,C677	CCCSL331J50
	C210	CCCSL470J50
	C609	CCCSL750J50
	C317,C319	CEANP010M50
	C426	CEANP100M16
	C318,C433	CEANP2R2M50
	C84	CEANP330M25
	C65,C160,C309	CEANP4R7M25
	C87,C611	CEANP470M16
	C205,C429,C435,C436,C620,C621	CEAS221M10
	C90,C120,C121,C127,C208,C437, C438,C441,C442	CEAS470M25
	C307,C403,C507	CEJANPR47M50
	C335	CEJANP3R3M50
	C681,C682	CEJAR47M50
	C68,C690,C693	CEJA010M50
	C80,C428,C600	CEJA100M16
	C69,C314,C316,C509,C601,C604, C606,C616,C630,C631,C684,C686, C692,C695,C697,C698	CEJA220M16
	C150	CEJA3R3M50
	C688,C689,C694	CEJA4R7M35
	C443,C444,C501,C502,C505,C541, C542	CEJA470M16
	C311,C432,C508	CFTXA104J50

Mark	Symbol & Description	Part No.
	C67	CFTXA124J50
	C434	CFTXA563J50
	C310	CFTXA683J50
	C411	CFTXA823J50
	C201,C333,C334,C602	CGCYX473M25
	C312	CKCYB102K50
	C409,C410,C417	CKCYB681K50
	C75,C76,C78,C88,C133,C301, C302,C337,C431,C439,C440,C504, C605,C607,C615,C617,C683,C685, C687,C691,C696,C699	CKCYF103Z50
	C89,C212,C612,C613	CKCYF223Z50
	C308,C414,C503	CQMA102J50
	C427	CQMA103J50
	C418,C420,C423,C425	CQMA122J50
	C83,C85	CQMA123J50
	C320,C404,C405	CQMA153J50
	C82	CQMA183J50
	C163,C412,C424	CQMA222J50
	C79,C322	CQMA223J50
	C305	CQMA392J50
	C430	CQMA393J50
	C304	CQMA473J50
	C306,C419,C422	CQMA682J50
	C303,C321	CQMA822J50
	C421	CQPA122J100

RESISTORS

Mark	Symbol & Description	Part No.
	VR1 Semi-fixed (1k Ω)	VRTB6VS102
	VR404 Semi-fixed (22k Ω)	VRTB6VS223
	VR3,VR10	VRTB6VS472
	Semi-fixed (4.7k Ω)	
	VR402,VR403,VR405	VRTB6VS473
	Semi-fixed (47k Ω)	
	VR501 Semi-fixed (1k Ω)	VRTG6VS102
	VR401 Semi-fixed (4.7k Ω)	VRTG6VS472
	R251 - R253 Resistor array	RA4S103J
	R242 Resistor array	RA8S103J
	R103,R104	RN1/6PQ□□□□F
	Other resistors	RD1/6PM□□□J

BLMB unit

The part number of the service parts are mentioned to the schematic diagram.

● DEMB unit (DWV1027)

CAPACITORS

Mark	Symbol & Description	Part No.
	C207,C209,C221,C222,C234,C265	CCCCH080D50
	C224,C235	CCCCH150J50
	C225,C257,C263	CCCCH180J50
	C208,C256,C262,C266	CCCCH220J50
	C238	CCCCH221J50

◎ DRIF unit (DWP1010)

Mark	Symbol & Description	Part No.
	C12,C223 C11,C237 C34,C36,C205,C206,C264 C219 C258	CCCCCH330J50 CCCCCH390J50 CCCCCH560J50 CCCCCH680J50 CCCSL121J50
	C202 C25,C210,C242 - C244 C24,C37,C38 C260,C261 C211	CCCSL151J50 CCCSL181J50 CCCSL221J50 CCCSL241J50 CCCSL271J50
	C227 C45 C47 C302,C307 C226,C259	CCCSL330J50 CEANLR47K50 CEANL220K16 CEANP100M16 CEANP4R7M25
	C32,C40,C54,C60 - C62 C22,C23,C59,C303,C306,C308, C311 C50,C51,C56,C57,C231 C5,C8	CEAS100M50 CEAS101M10 CEAS220M50 CEAS221M10
	C245 C13 C55,C214,C215,C220,C241,C252, C300,C304,C305 C1,C2,C49,C301,C309,C312	CEAS3R3M50 CEAS4R7M50 CEAS470M25 CEAS471M10
	C26,C27 C255 C39,C230 C228,C250 C46,C58	CEJANP220M10 CEJANP3R3M25 CEJA100M16 CEJA470M16 CFTXA104J50
	C28,C29,C232,C233 C30,C31 C201,C203,C212,C213, C216 - C218,C229,C236,C239, C240,C249,C251,C254, C267 - C270,C310,C313 - C315	CKCYB102K50 CKCYB472K50 CKCYF103Z50
	C3,C4,C6,C7,C9,C10,C248 C14,C15,C18,C19 C33,C35 C17,C21 C41,C42 C43,C44	CKCYF223Z50 CQMA112J50 CQMA152J50 CQMA222J50 CQMA393J50 CQMA822J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR201,VR202 Semi-fixed (1k Ω) R304 (10) R33,R34,R38,R53 Other resistors	VRTB6VS102 DCN1002 RD1/4VM□□□J RD1/6PM□□□J

CAPACITORS

Mark	Symbol & Description	Part No.
	C512 C509 C511,C522 C503 C505	CCCSL330J50 CEANP4R7M50 CEAS010M50 CEAS100M50 CEAS101M50
	C516,C517 C513,C514 C515,C519 - C521,C523 C501 C506	CEAS221M25 CEAS331M6R3 CGCYX473M25 CKCYB102K50 CKCYB331K50
	C502 C504,C507,C508,C518 C510	CKCYB471K50 CKCYF103Z50 CQMA102J50

RESISTORS

Mark	Symbol & Description	Part No.
	R524,C525 R518 R508 - R511 R506,R526 R507 Other resistors	RD1/2LF3R3J RD1/2PMF220J RN1/6PQ2202F RS1LMF□□□J RS3LMF1R2J RD1/6PM□□□J

3.4.10 Mechanism assembly

PREB unit (DWV1009)

CAPACITORS

Mark	Symbol & Description	Part No.
	C5,C8,C10,C20,C32 C12,C18,C23,C26 C36 C15,C16 C3,C14	CEAL010M50 CEAL100M16 CEAL2R2M50 CEAL470M50 CEANPR47M50
	C1,C17,C31 C37 C2,C4,C6,C7,C11,C19,C21,C22, C24,C25,C27 - C30,C33 - C35, C38 C13	CEANP4R7M35 CGDYX473M25 CKDYF103Z50 CQMA273J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR6 Semi-fixed (1k Ω) VR3,VR10 Semi-fixed (10k Ω) VR7 Semi-fixed (100k Ω) VR8 Semi-fixed (2.2k Ω) VR2 Semi-fixed (22k Ω)	VRTB6VS102 VRTB6VS103 VRTB6VS104 VRTB6VS222 VRTB6VS223
	VR1,VR5,VR9 Semi-fixed (4.7k Ω) VR4 Semi-fixed (47k Ω) R47,R96 R79,R80 Other resistors	VRTB6VS472 VRTB6VS473 RD1/4PM□□□J RN1/6PQ□□□F RD1/6PM□□□J

TLMB unit
CAPACITORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
	C592	CFTXA104J50
	C591	CGCYX473M25
	C593,C594	CKPUYF223Z25

3.4.11 PICK-UP Assembly (VWY1005)
HEAD unit
CAPACITORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
	C111,C112	CCSQCH181J50
	C103 - C106	CCSQCH331J50
	C107 - C110	CCSQSL561J50
	C101	CKSQYF223Z50
	C113	VCH-025

RESISTORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
	VR101 (22k)	VCP-141
	Other resistors	RS1/10S□□□J

3.5 ADJUSTMENT

- Be sure to turn off the power before starting adjustment which requires no power supply. Otherwise, a serious overrun may occur in the internal mechanism.
- If the adjustment requires power supply, make adjustment in the manual mode. To enter the manual mode, keep the door open, and while pressing down S101 and S102 in the MCDR unit (DWG1053), turn on the power. (If S101 and S102 are kept pressed for more than 10 seconds after the power is turned on, the equipment enters another mode.) In the manual mode, each of the changer mechanisms can be operated independently. (Refer to page 135 for details.)

3.5.1 Adjustment of the space between the reverse gear A and the reverse base assembly

Adjust the space between the reverse gear A and the slider washer so that it is 0.1 ± 0.05 mm to obtain a suitable clearance for the backlash of the reverse gear A and B in the direction of thrust.

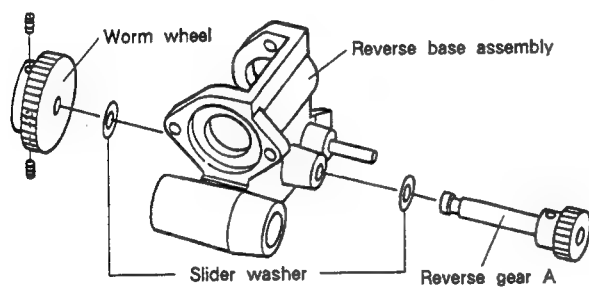


Fig. 3-5-1

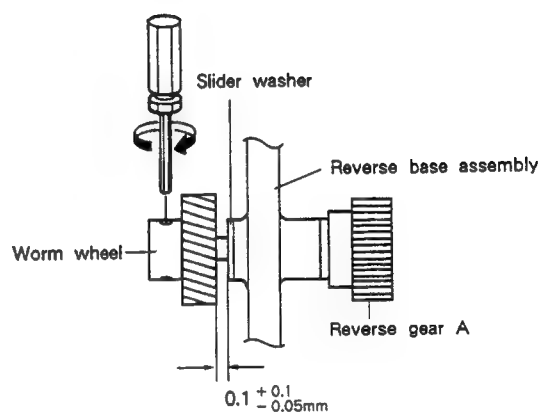


Fig. 3-5-2

3.5.2 Adjustment of the space between the chuck gear B and the arm base A

Adjust the space between the chuck gear B and the slider washer so that it is 0.1 ± 0.05 mm to obtain a suitable clearance for the backlash of the chuck gear B in the direction of thrust.

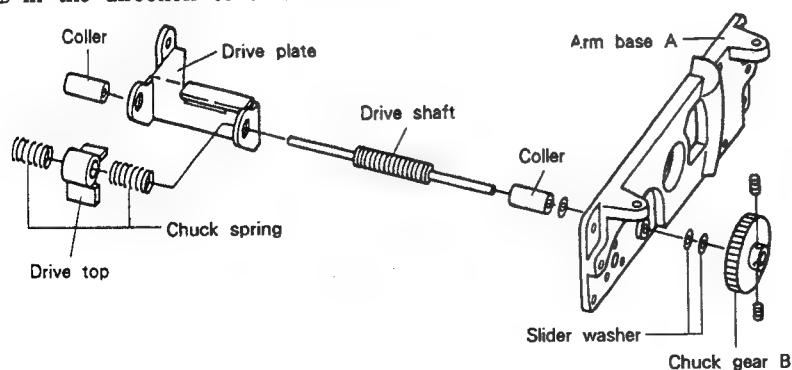


Fig. 3-5-3

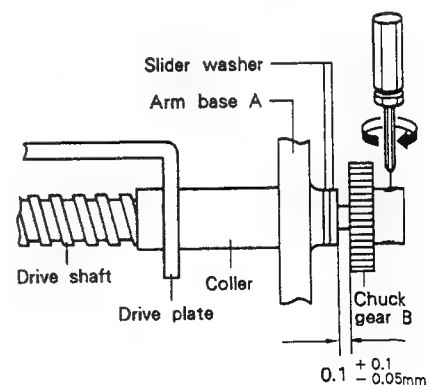


Fig. 3-5-4

3.5.3 Adjustment of the space between the chuck gear A and the arm base A

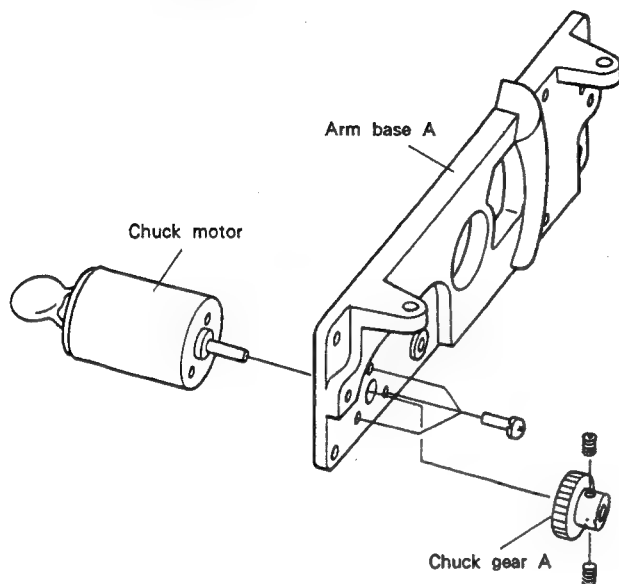


Fig. 3-5-5

Adjust the space between the chuck gear A and the arm base A so that it is $0.7 \pm 0.2\text{mm}$ to obtain a suitable clearance for the chuck gear A.

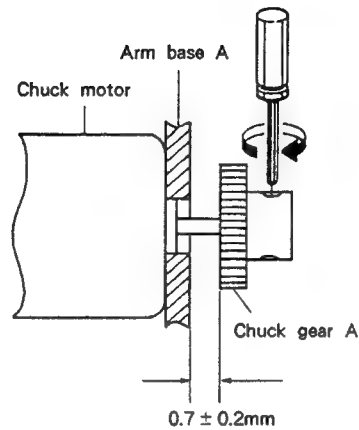


Fig. 3-5-6

3.5.4 Adjustment of the space between the horizontal drive worm gear and the pulley E

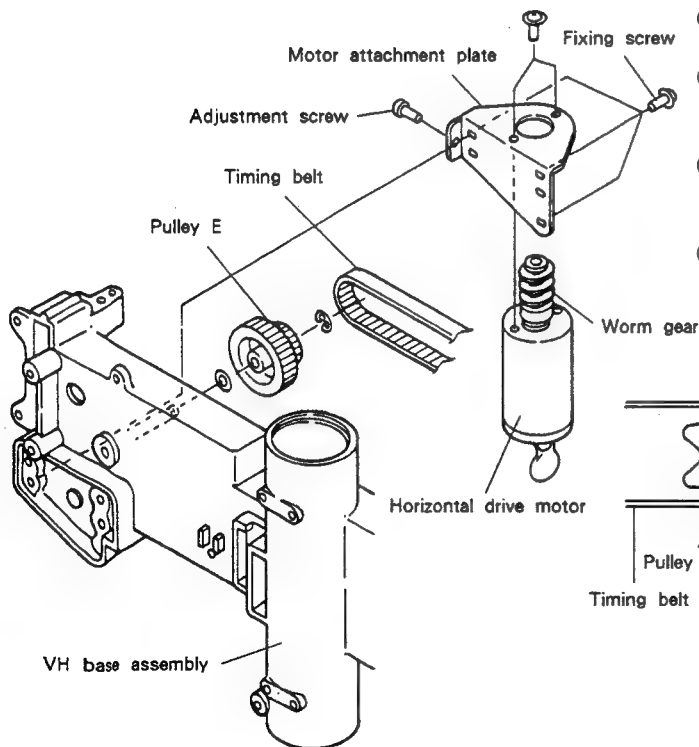


Fig. 3-5-7

Adjust the space to obtain a suitable backlash of the horizontal drive worm gear.

- ① Loosen the fixing screw of the motor attachment plate.
- ② Adjust the adjustment screw so that there is a slight contact between the worm gear of the motor and the worm wheel of the pulley E.
- ③ Turn the adjustment screw approximately 180 degrees so that a clearance of 0.1 to 0.25 mm is obtained.
- ④ Tighten the fixing screw.

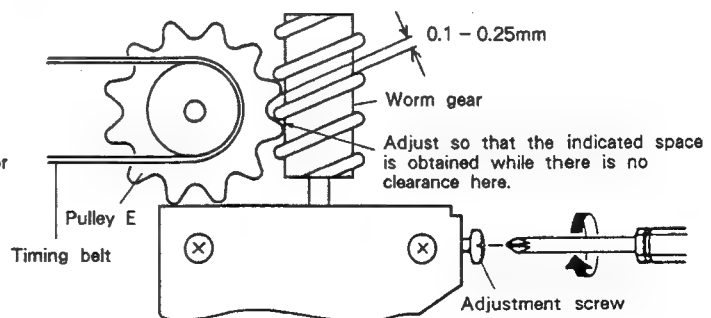


Fig. 3-5-8

3.5.5 Adjustment of the horizontal position of the arm and the reverse stop position

Adjust them so that a disc can be set at the level position in the LDP assembly and the disc rack. When the horizontal position of the arm is adjusted correctly, the reverse stop position may become incorrect, or vice versa. When one of them has been adjusted, make sure that the other remains correct.

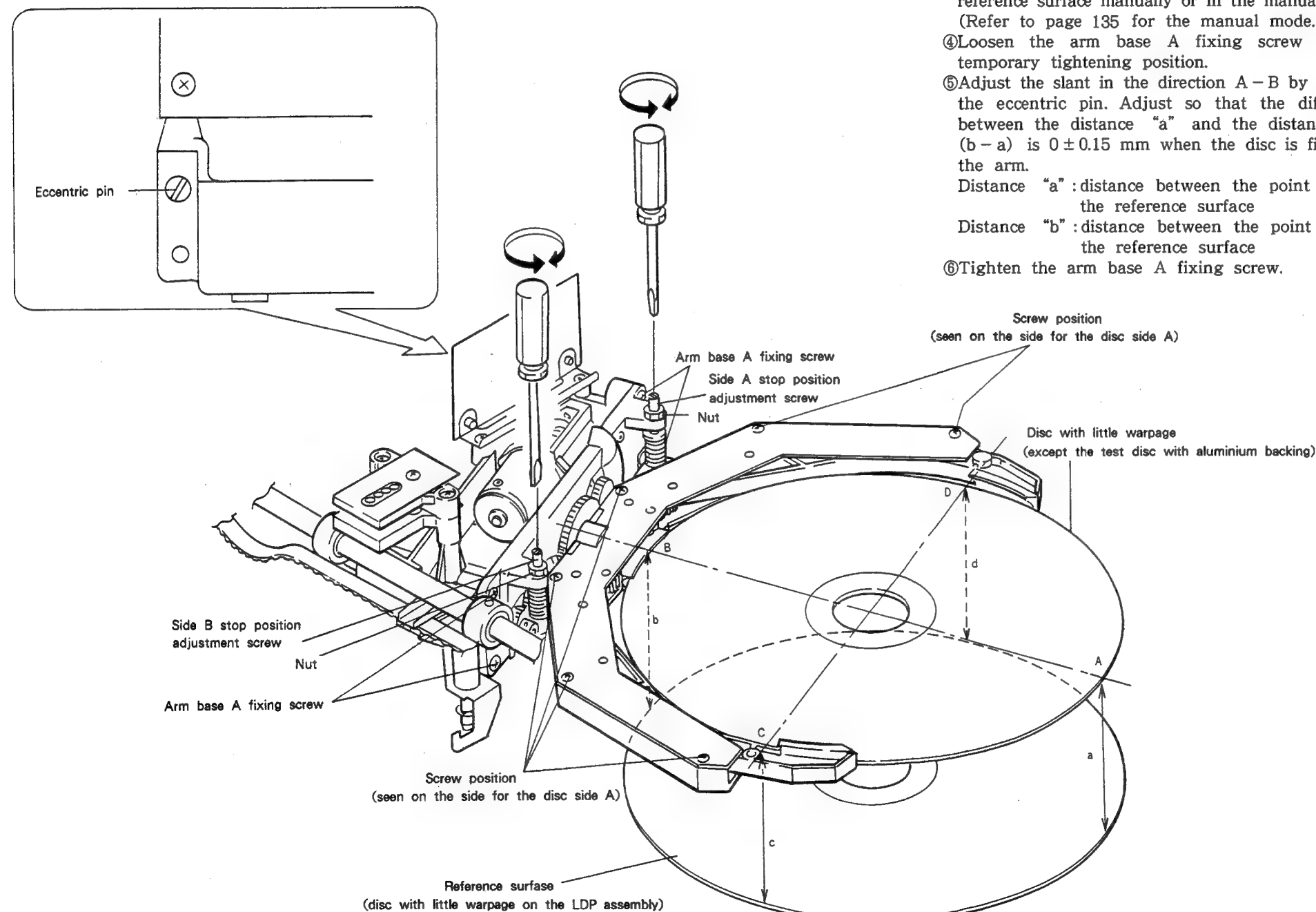


Fig. 3-5-9

3.5.5.1 Adjustment of the arm horizontal position (direction A - B in Fig. 3-5-9)

- ① Place a disc with little warpage (such as a test disc) on the LDP assembly and fix it with the clasper. The surface upper side of the disc is regarded as the reference surface. (Or, remove the LDP assembly and place a flat plate on the three bosses for the LDP assembly attachment. The surface of the plate is regarded as the reference surface.)
- ② Place a disc with little warpage (except a test disc with aluminium backing since it is heavier than a normal disc) so that the disc is fixed by the arm.
- ③ Move the arm a few centimeters above the reference surface manually or in the manual mode. (Refer to page 135 for the manual mode.)
- ④ Loosen the arm base A fixing screw to the temporary tightening position.
- ⑤ Adjust the slant in the direction A - B by turning the eccentric pin. Adjust so that the difference between the distance "a" and the distance "b" ($b - a$) is 0 ± 0.15 mm when the disc is fixed by the arm.
 Distance "a": distance between the point A and the reference surface
 Distance "b": distance between the point B and the reference surface
- ⑥ Tighten the arm base A fixing screw.

3.5.5.2 Adjustment of the reverse rotation stop position (direction C - D in Fig. 3-5-9)

- ⑦ Prepare as described in steps ① and ② in the adjustment of the arm horizontal position. Move the arm approximately 15cm above the reference surface.
- ⑧ Set the arm so that the side for the disc side A faces upward. (Screw positions on the arm are seen.)
- ⑨ Loosen the nut of the side A stop position adjustment screw (the right one when seen from the arm side).
- ⑩ Adjust the slant in the direction C - D by turning the side A stop position adjustment screw. Adjust so that the difference between the distance "c" and the distance "d" ($d - c$) is 0 ± 0.15 mm when the disc is fixed by the arm.
 Distance "c": distance between the point C and the reference surface
 Distance "d": distance between the point D and the reference surface
 Turn the screw clockwise to increase the distance "c" and counterclockwise to increase the distance "d".
- ⑪ When the adjustment is completed, tighten the nut of the side A stop position adjustment screw.
- ⑫ Turn over the arm manually or in the manual mode so that the side for the disc side B faces upward.
- ⑬ Loosen the nut of the side B stop position adjustment screw (the left one when seen from the arm side).
- ⑭ Adjust the slant in the direction C - D by turning the side B stop position adjustment screw. Adjust so that the difference between the distance "c" and the distance "d" ($d - c$) is 0 ± 0.15 mm when the disc is fixed by the arm.
 Distance "c": distance between the point C and the reference surface
 Distance "d": distance between the point D and the reference surface
 Turn the screw clockwise to increase the distance "d" and counterclockwise to increase the distance "c".
- ⑮ When the adjustment is completed, tighten the nut of the side B stop position adjustment screw.

3.5.6 Adjustment of the vertical drive system

3.5.6.1 Adjustment of the space for the disc slit
When the disc slit is replaced, adjust the space between the slit and the photo interrupter, and make verification of the vertical motor encoder pulse duty ratio/phase difference (as described in 3.5.6.2.)
Adjust the space between the disc slit and the photo interrupter so that it is $0.5 \pm 0.1\text{mm}$ by turning the hexagonal screw of the disc slit.

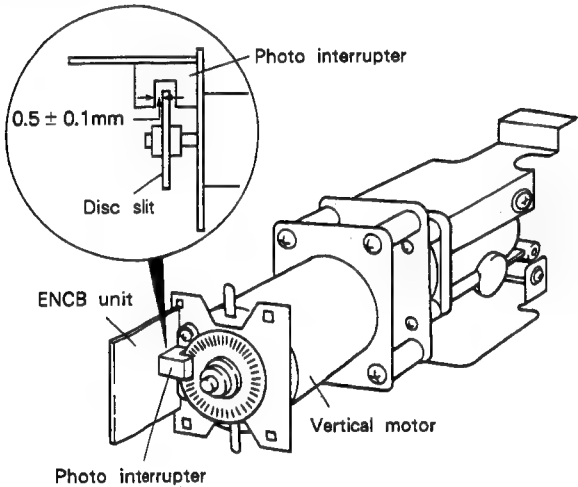
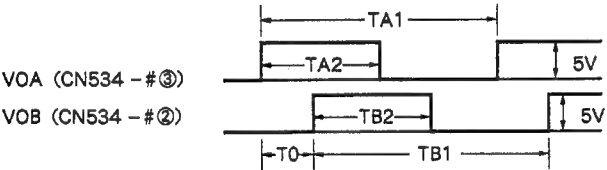


Fig. 3-5-10

3.5.6.2 Verification of the vertical motor encoder pulse duty ratio/phase difference

(1) Verify that the duty ratio and the phase difference of pins CN534 ③ (VOA) and ② (VOB) satisfy the following standard both in the rotation CCW (upward) and rotation CW (downward) when the VH base is activated in both directions in the manual mode. (Refer to page 135 for the manual mode.)
(For the rotation CW as observed from the motor axis)



(For the rotation CCW as observed from the motor axis)

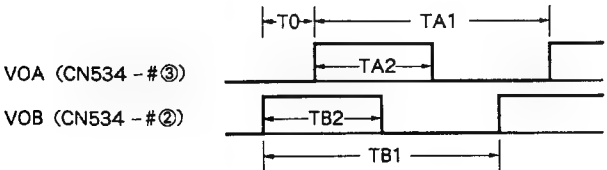
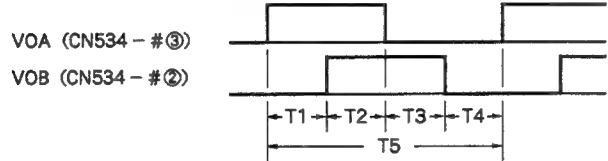


Fig. 3-5-11

	Formula to be applied	Standard
Duty ratio	$DA\ (cw, ccw) = \frac{TA2}{TA1} \times 100 (\%)$	DA, DB (cw, ccw) = 40 - 60 %
	$DB\ (cw, ccw) = \frac{TB2}{TB1} \times 100 (\%)$	
Phase difference	$0\ (cw) = \frac{T0}{TA1} \times 360 (^{\circ})$	0 (cw, ccw) = 90 - 120°
	$0\ (ccw) = \frac{T0}{TB1} \times 360 (^{\circ})$	

Table 3-5-1

(2) If the above standard is not satisfied, the following standard should be satisfied.
(for the rotation CW as observed from the motor axis)



(for the rotation CCW as observed from the motor axis)

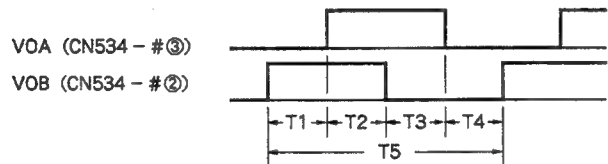


Fig. 3-5-12

	Formula to be applied	Standard
Division ratio	$D1\ (cw, ccw) = \frac{T1}{T5} \times 100 (\%)$	D1 - 4 (cw, ccw) = 5 - 60 %
	$D2\ (cw, ccw) = \frac{T2}{T5} \times 100 (\%)$	
	$D3\ (cw, ccw) = \frac{T3}{T5} \times 100 (\%)$	
	$D4\ (cw, ccw) = \frac{T4}{T5} \times 100 (\%)$	

Table 3-5-2

(3) If neither the above standards (1) nor (2) are satisfied, the vertical motor speed detection system is out of order.

3.5.6.3 Adjustment of the VD pulley position
Set the VD pulley so that the screw comes into the V-shaped groove, and fix the VD pulley by the screw so that the space between the pulley and the flange of the gear box assembly is $0.5 \pm 0.2\text{mm}$.

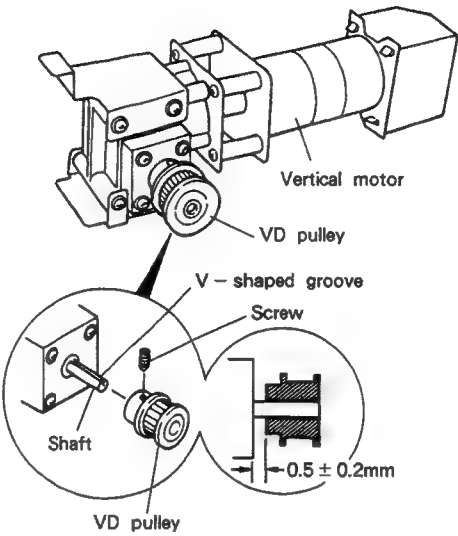


Fig. 3-5-13

3.5.6.4 Adjustment of the timing belt tension
(between the pulley D and the VD pulley)
Adjust so that the pulley holder assembly is pulled by the force of $8 \pm 1\text{kg}$ by turning the adjustment nut.

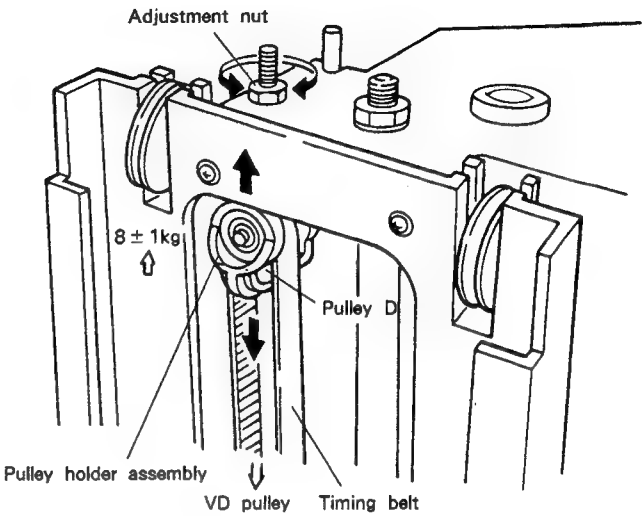


Fig. 3-5-14

3.5.6.5 Adjustment of the VMDR unit (DWP1011)

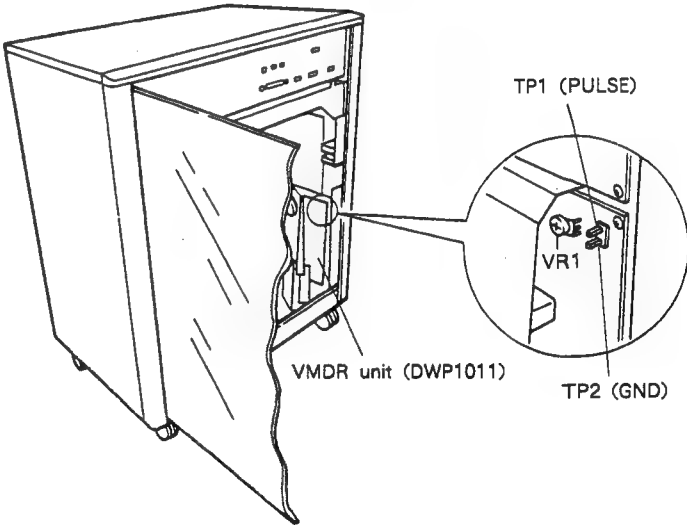


Fig. 3-5-15

Adjustment of the VMDR unit (DWP1011)

Item	Content and position of the adjustment	Adjustment specifications	Adjustment value
1	Adjustment of the pulse width VMDR unit VR1 (DWP1011)	①Set VR1 to the mechanical center position. ②Adjust VR1 (semi-fixed resistance of 10 kilohms) so that the pulse width falls in the value shown to the right by observing TP1 of the VMDR unit using an oscilloscope. During the adjustment, the VH base should be moved upward or downward in the manual mode. (Refer to page 135 for the manual mode.) The vertical motor rotates at the lowest speed or the secondary speed. Turn VR1 clockwise to increase the pulse width (consequently to decrease the speed), and counterclockwise to decrease the pulse width (consequently to increase the speed.)	 $22 \pm 1 \mu\text{sec}$

3.5.6.6 Adjustment of the vertical stop position

1. Prepare a normal disc with no warpage. (Do not use a test disc with aluminium backing since it is heavier than a normal disc.)
2. Set the disc in the rack manually or in the manual mode so that the disc is fixed by the arm. See page 135 for the manual mode. When setting the disc manually, be sure to turn off the power. Otherwise, the internal mechanism may overrun and become harmful.
3. Move the arm upward manually or using the vertical movement mode 1 in the manual mode so that the disc comes to the position just between the upper surface of the disc stopper and the bottom surface of the upper rack (where the disc can be removed.) Do not use the vertical movement mode 2 since the arm will move up to the next stop position as controlled by the sensor.)
4. Loosen the two screws ① which fix the vertical stop position sensor (VSNB unit).
5. Observe the vertical stop position sensor signal by observing the DC voltage at pins 33, 35 and 36 of IC1 in the MCDR unit (DWG1053).
6. Turn the vertical stop position sensor (VSNB unit) adjustment screw ② so that the voltage at pins 33 and 35 is HIGH (5V) and the voltage at pin 36 is LOW (0V).
7. Tighten the two screws ① to fix the vertical stop position sensor (VSNB unit).
8. Move the arm downward manually or using the vertical movement mode 1 in the manual mode to the position where the disc can be set in the rack. At this time, verify that the voltage at pin 33 is LOW (0V) and the voltage at pins 35 and 36 is HIGH (5V). If these voltages are not obtained, readjust the adjustment screw.

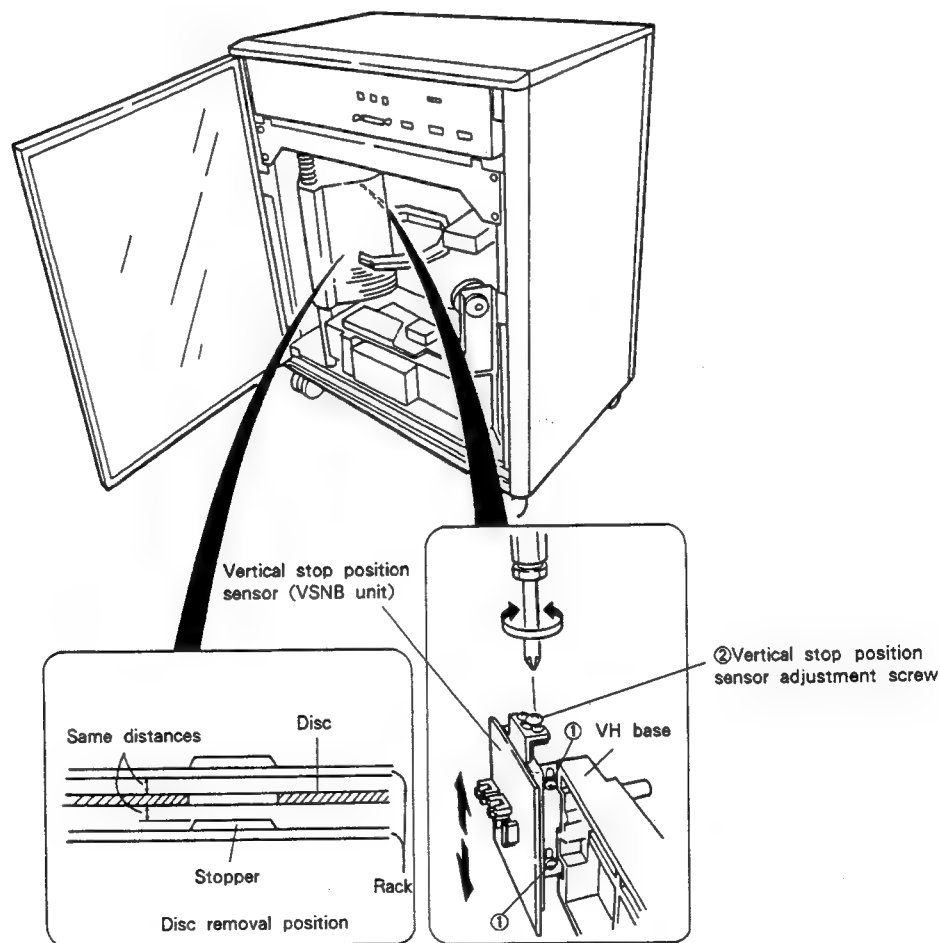


Fig. 3-5-16 Adjustment of the vertical stop position

3.5.7 Adjustment of the door position

If the door position is not correct, adjust it as described below.

3.5.7.1 Moving the door forward/backward

Loosen the fixing screw of the sliding hinge, adjust the position of the hinge and fix it again. If the upper and lower hinges are moved by the same amount, the door position is adjusted forward/backward. (Refer to Fig. 3-5-17.) If the two hinges are moved by the different amount, the slant of the door can be adjusted.

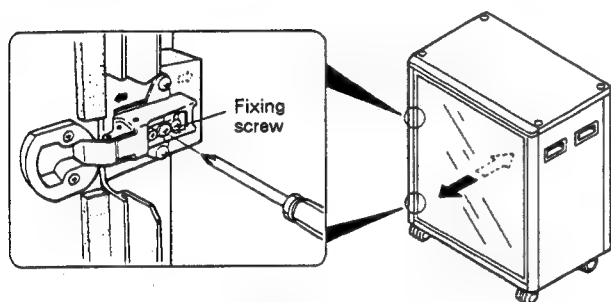


Fig. 3-5-17 Adjusting the door position forward/backward

3.5.7.2 Moving the door to the right/left

Turn the right/left position adjustment screw at the hinge clockwise to move the door to the right, and counterclockwise to move it to the left. If upper and lower adjustment screws are turned by the same amount, the door position is adjusted to the left or to the right. (Refer to Fig. 3-5-18.) If they are turned by the different amount, the door inclination can be adjusted. (Refer to Fig. 3-5-19.)

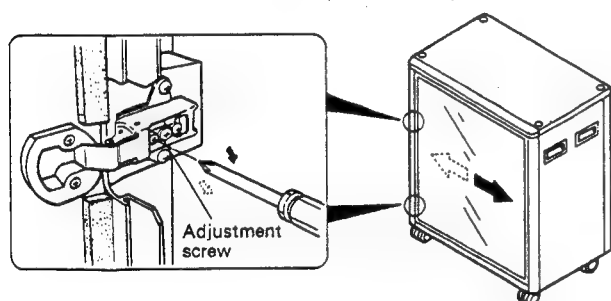


Fig. 3-5-18 Adjusting the door position to the right/left

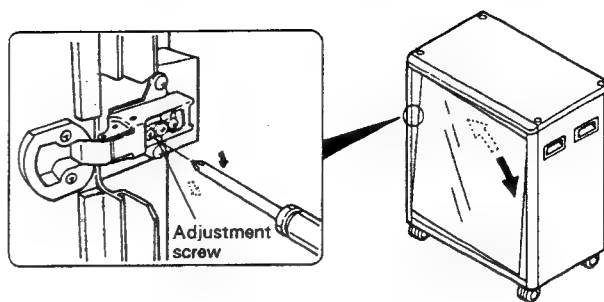


Fig. 3-5-19 Adjusting the door inclination

3.5.7.3 Moving the door upward/downward

Loosen the height adjustment screws of both the upper and lower sliding hinges, adjust the door height, and tighten the screws. (Refer to Fig. 3-5-20.)

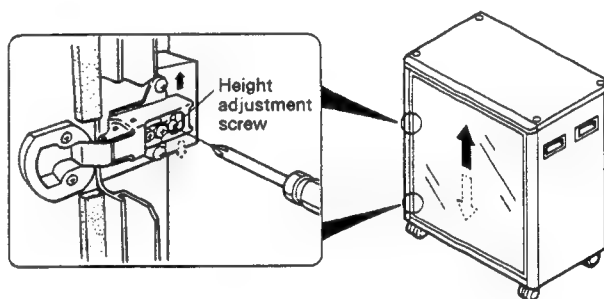


Fig. 3-5-20 Adjusting the door height

3.6 DISASSEMBLY

3.6.1 REPLACEMENT OF LDP ASSEMBLY (DXX1170)

[Removal]

1. Open the door by the key. When the door is open, the LC-V20 is automatically reset to its initial status, unless there is any trouble in the changer mechanism. (In the initial status, a dummy disc is clamped on the LDP assembly (DXX1170).)
2. Release the clamp manually or in the manual mode. When releasing manually, be sure to turn off the power in advance, or the internal mechanism may overrun. For the manual mode, refer to page 135. Then return the dummy disc to the disc rack, and move the VH base to the very upper position. Turn off the power, if it has been turned on.
3. Remove the three screws ① which fix the LDP assembly (DXX1170) to the LDP base assembly.

4. Free the wires connected to the LDP assembly (DXX1170) from the catches, and put the LDP assembly in the standing position as shown in illustration a.
5. Remove the wires which connect the LDP assembly to the main unit from the LDP assembly, and remove the LDP assembly.

[Installation]

6. To install the LDP assembly (DXX1170), follow the reverse procedure of removal. When the door is closed and power is turned on after the LDP assembly has been installed, the LC-V20 automatically executes the operation check and enters the standby mode in the initial status.

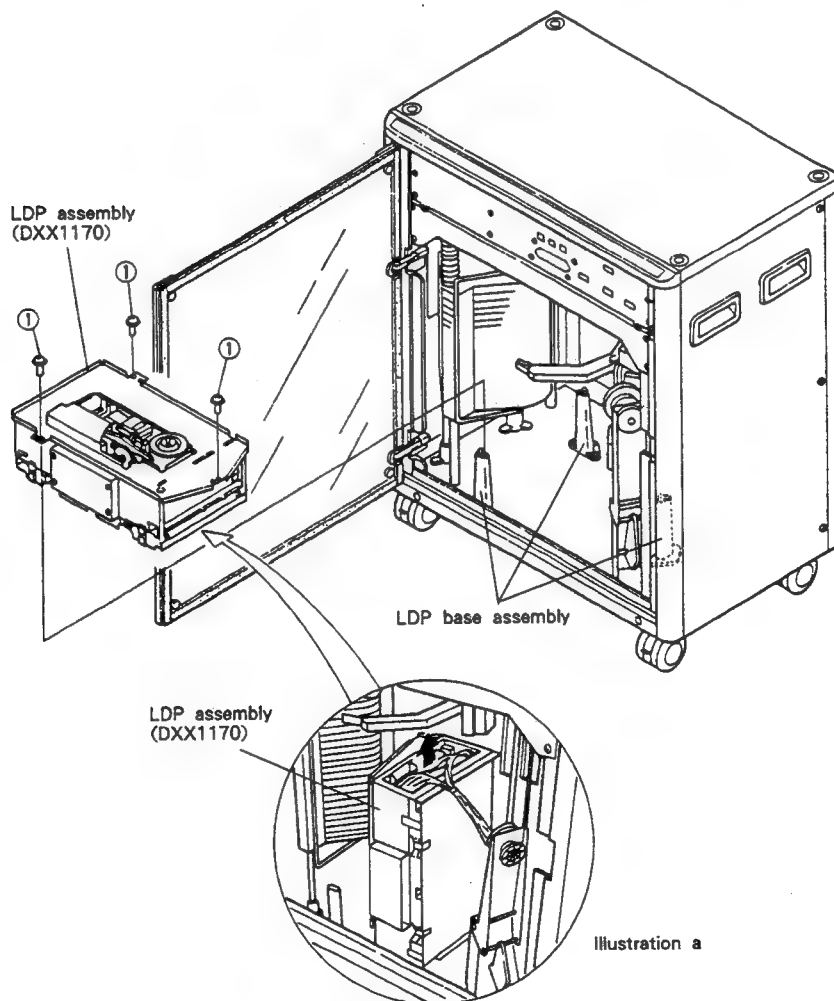


Fig. 3-6-1 Replacement of the LDP assembly (DXX1170)

3.6.2 REPLACEMENT OF THE ARMFUL ASSEMBLY (DXX1135)

[Removal]

1. Open the door by the key.
2. Move the armful assembly (DXX1135) to the position where it can be easily removed manually or in the manual mode. When moving manually, be sure to turn off the power in advance, or the internal mechanism may overrun. Use the manual mode if there is no trouble in the moving system. (For the manual mode, refer to page 135.)
3. Remove the three screws ① and remove the sensor cover.
4. Remove the flexible cord (DDD1007) which connects the VCMD unit and the HCNC unit from CN426 on the VCMD unit.
5. Remove the two screws ② and remove the HSNB unit from the armful assembly (DXX1135). (Since the HSNB unit is a component of the armful assembly, it should be replaced at the same time.)

6. Loosen the screw ③ and loosen the belt presser. This allows the armful assembly (DXX1135) to be removed from the timing belt (DWS-103).
7. Loosen the two screws ④ using a hexagon wrench, and remove the armful assembly (DXX1135) from the VH base together with the guide bar. Then remove the guide bar from the armful assembly (DXX1135).

[Installation]

8. To install the armful assembly (DXX1135), remove the HSNB unit temporarily, and follow the reverse procedure of removal. Be sure that the projections on the armful assembly are correctly aligned to the grooves of the timing belt. (Refer to illustration b.)

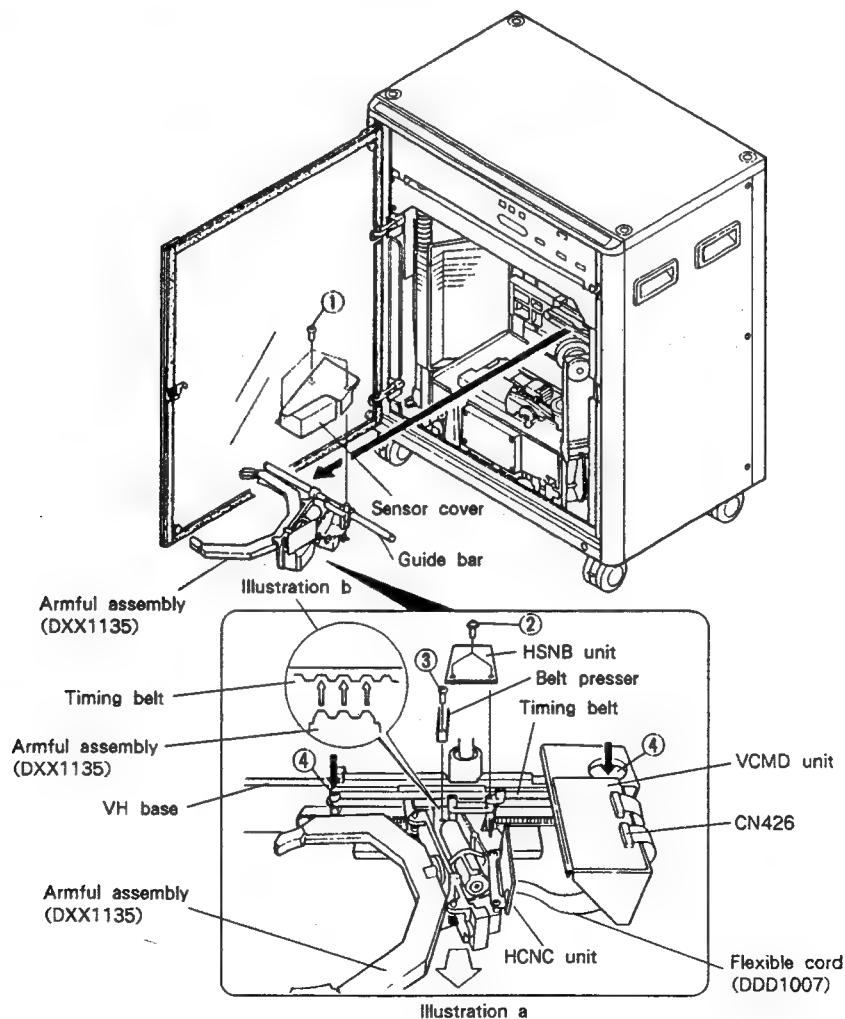


Fig. 3-6-2 Replacement of the armful assembly (DXX1135)

3.6.3 REMOVAL OF THE UPPER BOARD BLOCK

1. Open the door by the key.
2. Remove the two screws ①. The upper board block can be pulled out within the length of the wires.
3. To remove the upper board block completely, disconnect the wires which connect the upper board block to the changer mechanism and the LDP assembly, etc. Disconnect also CN612 and CN620 on the SCNT unit (DWG1064), CN601 and CN602 on the AVHB unit (DWK1006), and CN528, CN529 and CN531 on the SYPS unit (DWR1028). When installing the upper board block, make sure that the wires are reconnected correctly.

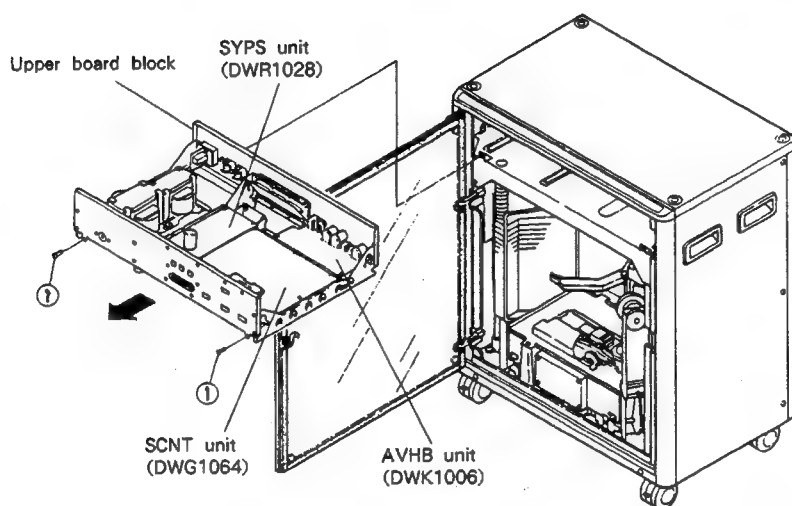


Fig. 3-6-3 Removal of the upper board block

3.6.4 REMOVAL OF THE DOOR

1. Open the door by the key.
2. Loosen the two screws ① (upper and lower) which fix the sliding hinges to the hinge plates.
3. Remove the sliding hinges from the hinge plates by sliding the hinges. Remove then the door.

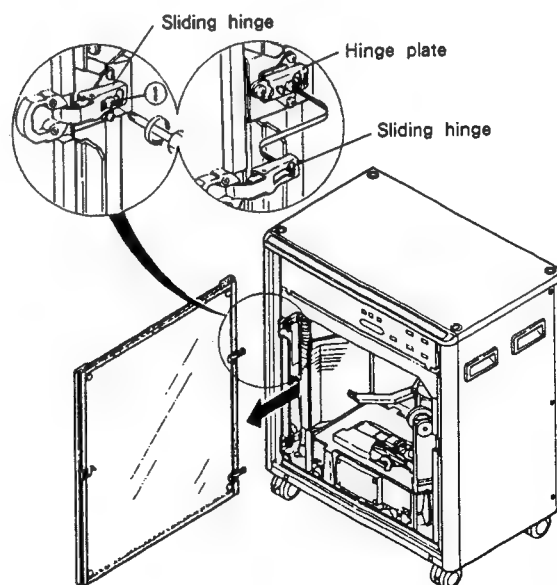


Fig. 3-6-4 Removal of the door

3.6.5 REMOVAL OF THE SIDE PANELS

(Remove the right panel and the left panel in the same way.)

1. Remove the screws ① (four on each side) and remove the catches. (The catches are fixed directly to the main unit.)
2. Remove the screws ② (three on each side).
3. Slide the side panels backward, and then remove them.

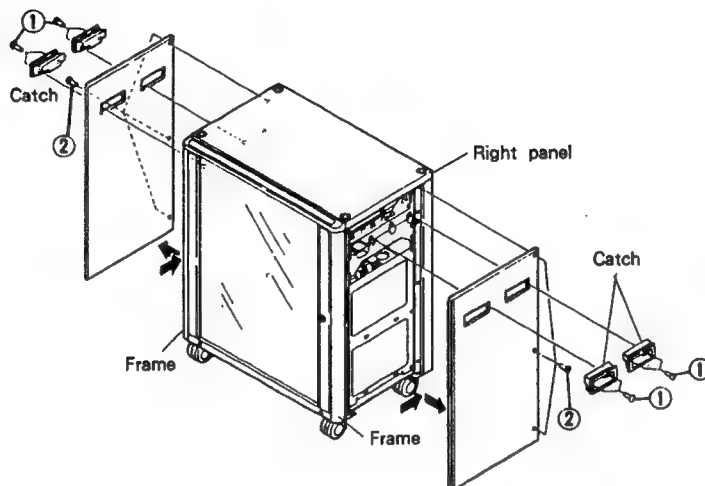


Fig. 3-6-5 Removal of the side panels

3.6.6 REMOVAL OF THE TOP PANEL

1. Remove the four screw covers B ① using a minus screw driver, etc.
2. Remove the four screws ② and then remove the top panel.

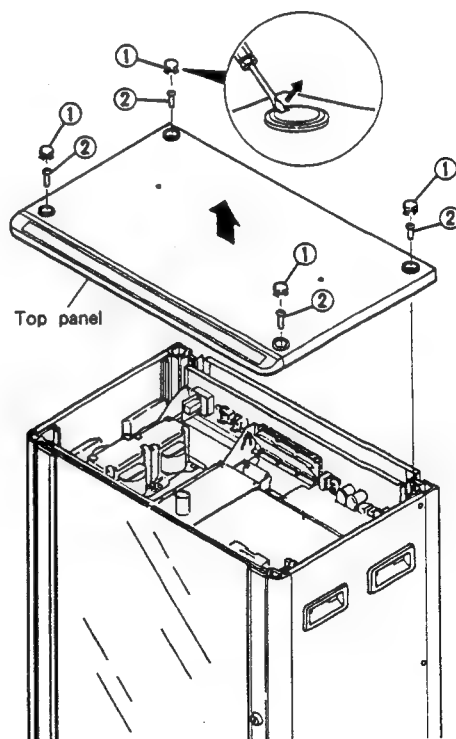


Fig. 3-6-6 Removal of the top panel

3.6.7 REMOVAL OF THE REAR PANEL

1. Remove the seven screws ① and then remove the rear panel.

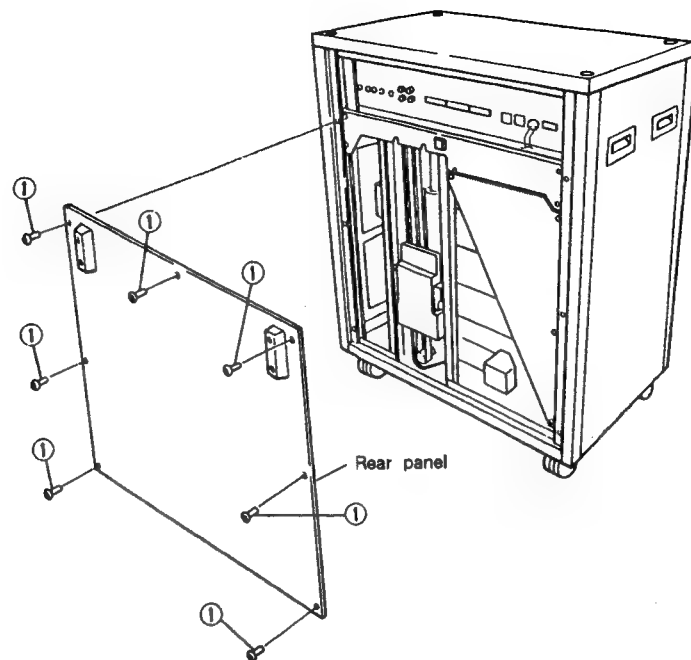


Fig. 3-6-7 Removal of the rear panel

3.6.8 REMOVAL OF THE UPPER FRAME

1. Remove the door, side panels, top panel, rear panel and upper board block. (Refer to pages 127 to 129 for each removal.)
2. Remove the wires from the upper frame.
3. Remove the screw ① which fix the upper frame to the back plate C.
4. Remove the sixteen screws ②
5. Remove the upper frame by pulling it upward.

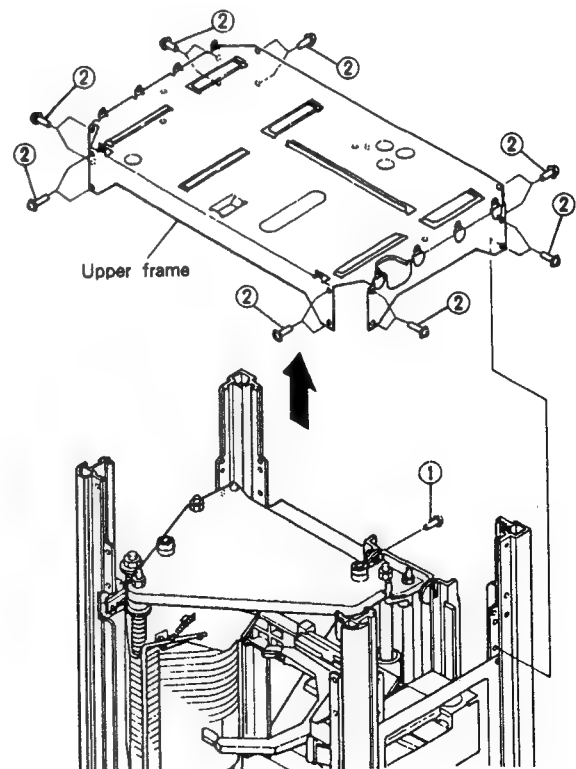


Fig. 3-6-8 Removal of the upper frame

3.6.9 REMOVAL OF THE UPPER BASE

1. Remove the upper frame. (Refer to "3.6.8 REMOVAL OF THE UPPER FRAME.")
2. Remove the pulley holder assembly by removing the nut ①.
3. Remove the two screws ② which fix the upper base to the rail.
4. Remove the three nuts ③
5. Remove the upper base by pulling it upward.

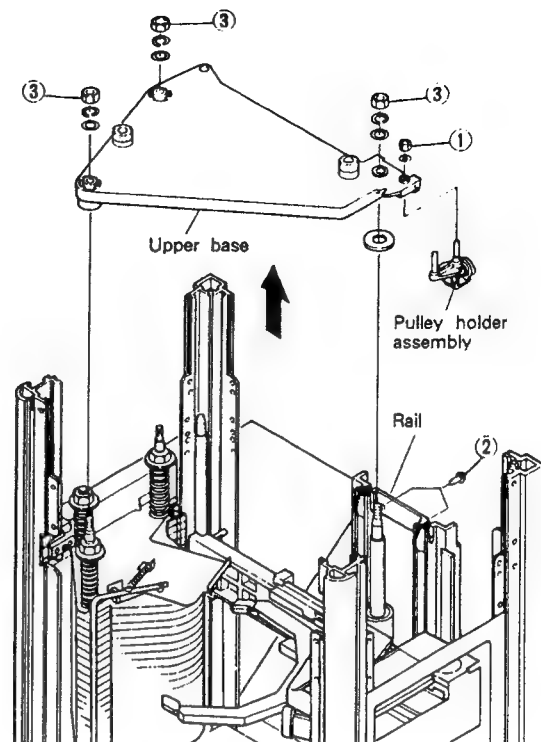


Fig. 3-6-9 Removal of the upper base

3.6.10 REMOVAL OF THE VH BASE

1. Remove the upper base. (Refer to "3.6.9 REMOVAL OF THE UPPER BASE.")
2. Move the VH base manually to the position where the wire assemblies fixed to the VH base are seen through the slits on the rails, and the holes of the weight assembly coincide with the holes of the rails. (The VH base can be moved easily when the timing belt is removed from the VD pulley, since the pulley holder has been removed at the upper base removal.)
3. Insert M6 screws or similar objects (such as screw drivers) to the holes of both the weight assembly and the rails so that the weight assembly will not drop when the wire assembly is removed.
4. Remove the screw ① and remove the belt presser.
5. Support the VH base by the hand so that it will not drop when the wire assembly is removed, and remove the wire assembly by removing the two nuts ②.
6. Remove the VH base by pulling it upward.

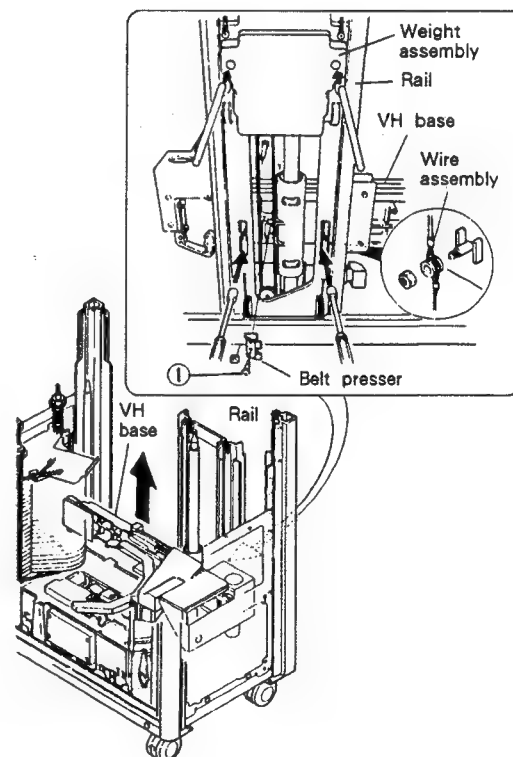


Fig. 3-6-10 Removal of the VH base

3.6.11 HOW TO MOVE THE VH BASE WHEN IT STOPS HALFWAY

1. Moving the VH base manually

Refer to Fig. 3-6-11. Turn the screw ① 6 or 7 times using a hexagon screw driver or a hexagon ball driver with a distance of 2.5mm between the two opposite sides. Then push down the screw ① and loosen the belt. The VH base can be moved manually.

2. Moving the VH base when it has stopped on the LDP during playback (and the manual mode cannot be entered by any cause)

If the clumper is moved down, lift up the clumper manually by turning the crank arm or the SW cam to the right, since the screw ① cannot be accessed by the screw driver. (Refer to Fig. 3-6-12.) Remove the disc from the arm, and loosen the screw. Then proceed as described above 1.

3. Fixing the belt (for installation)

Before turning the screw ①, make sure that the belt and the belt presser coincide correctly.

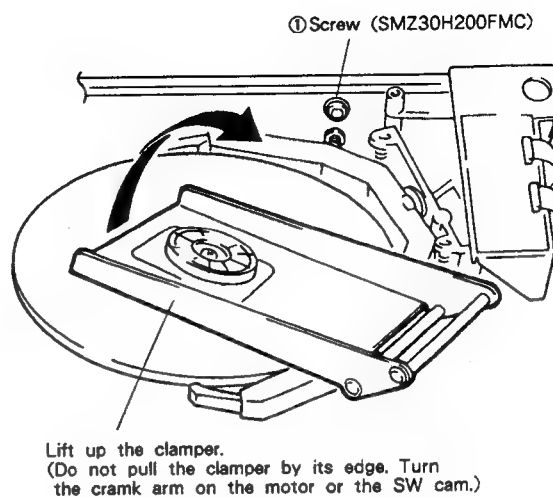


Fig. 3-6-11

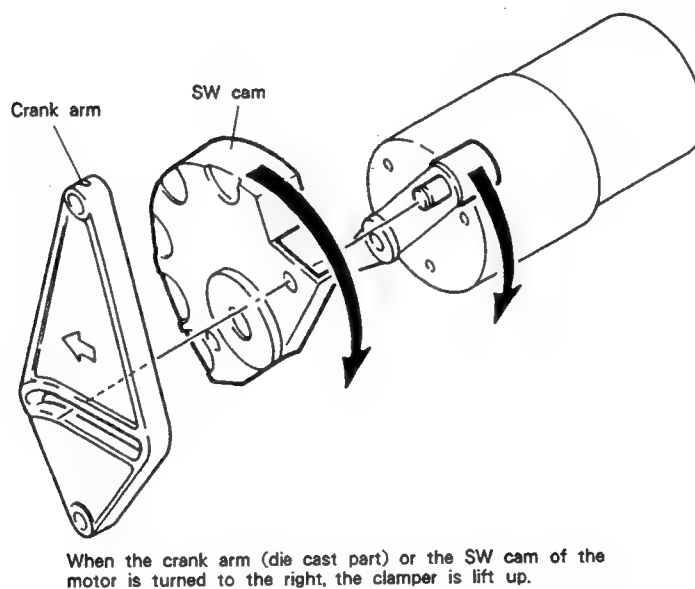
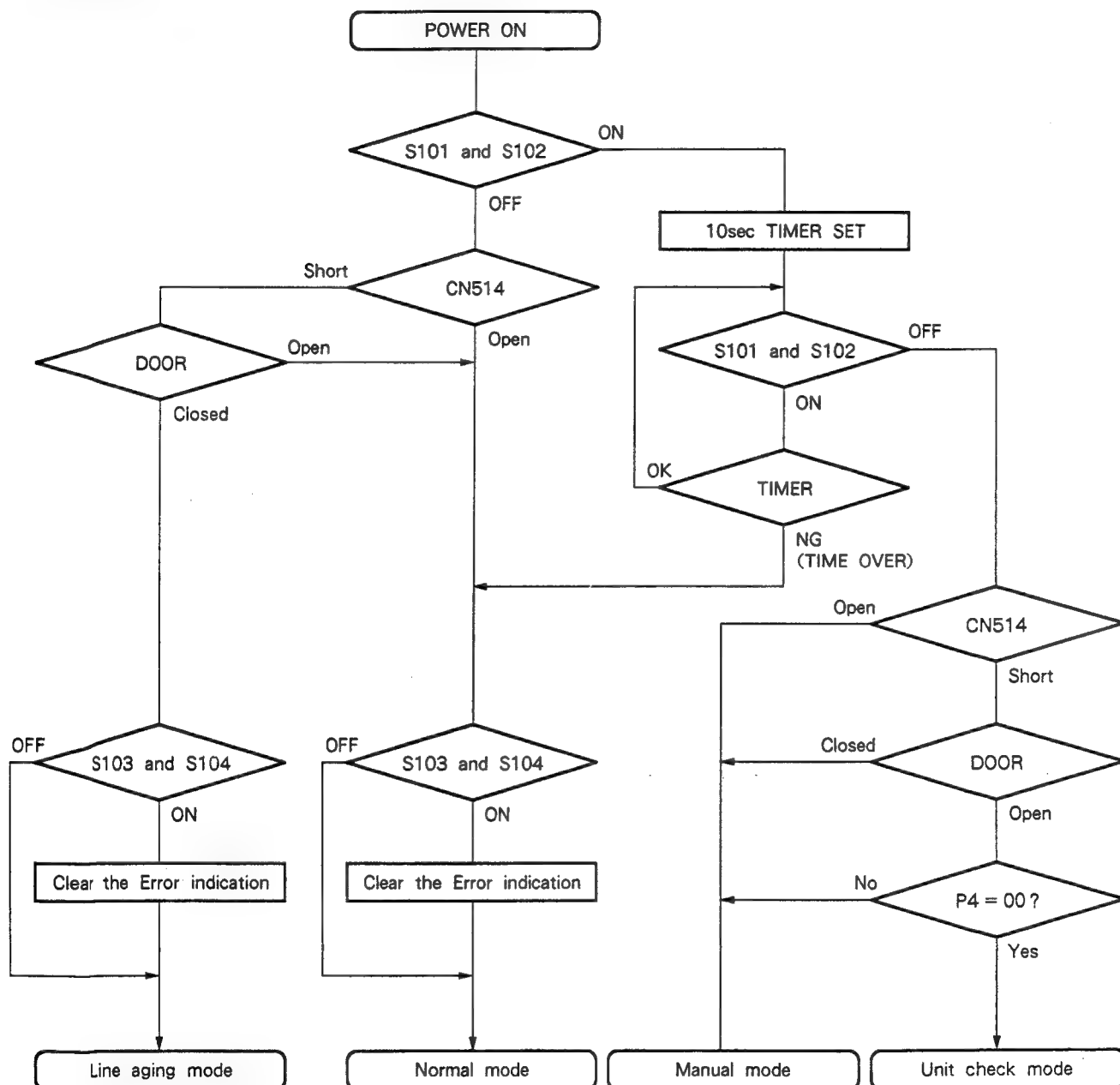


Fig. 3-6-12

3.7 SERVICE MODE

The LC-V20 is supplied with the service mode for the operation test and checking of the changer mechanism in the laser juke box.

1. Normal mode
2. Manual mode



How to enter each mode

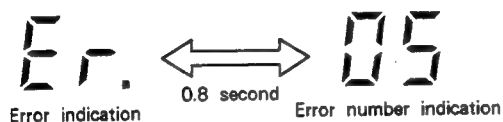
3.7.1. NORMAL MODE

In this mode, the LED on the MCDR unit is not light except when an error occurs, or S101 or S102 is pressed.

● Error indication

When the CPU which controls the mechanism detects an error, the error indication appears. The error indication and the error numbers appear alternately in each 0.8 second.

Ex.)



When an error occurs, the error number indication remains lit until the error indication is cleared. When the power is turned on again and operation is possible, only the error number is displayed. Press S101 and S102 simultaneously to see the operation mode at the moment the error occurred.

How to clear the error indication

Turn on the power while pressing S103 and S104. The error indication will be cleared.

● If only S101 is pressed

The 7-segment LED will show the operation mode of the CPU which controls the mechanism.

● If only S102 is pressed

The 7-segment LED will show the vertical address (in decimal notation). The address of the first tray is 1, and the address of the LDP is 25. The indication (up limit) means the position above the first tray, and the indication (down limit) means the position under the LDP.

Error numbers

Error No.	Meaning
01	Trouble in the vertical sensor
02	Vertical address count error
03	Vertical motor overrun (Trouble in rotary encoder pulse)
04	Overflow in vertical movement (Trouble in address count lap time)
05	Trouble in 24V power line (Trouble in fuse, etc.)
07	Trouble caused by time over error in vertical movement
10	Trouble in AV SELECT signal from LDP
12	Trouble in EEPROM
17	Time over error in movement
27	Time over error in horizontal movement
31	Trouble in the clasper switch (Simultaneous activation, etc.)
37	Time over error in clasper operation
41	Trouble in chuck sensor (Two chuck sensor outputs are both HIGH.)
47	Time over error in chuck operation
51	Trouble in turnover sensor (Two turnover sensor outputs are both HIGH.)
56	Turnover trouble at the rack side (Operation impossible)
57	Time over error in turnover movement
99	No backup memory, no place where the disc should be returned.

Operation modes

● Initial modes

Mode No.	Mode
0.0	Chuck open/close when disc clamped on LDP, waiting SPDL STOP
0.1	Horizontal movement toward LDP
0.2	Clamp down, chuck closed
0.3	Clamp initial up
0.4	Initial vertical movement, movement to the turnover address (13th disc)
0.5	Turnover (B→A)
0.6	Vertical movement toward tray
0.7	Horizontal movement, chuck open, vertically 4.2mm down
0.8	Horizontal movement toward tray, chuck open, vertically down
0.9	Vertical backup memory cleared, waiting chuck open
0.A	Clamp initial up, checking vertical address
0.B	Vertical movement to the dummy disc address
0.C	Chuck close start
0.D	Chuck close, vertically 4.2mm up
0.E	Horizontal movement toward LDP
0.F	Vertical movement, checking vacant tray

● Waiting modes

Mode No.	Mode
1.1	Sending DATA REQ to MPU of SCNT
1.2	Waiting selection number data from MPU of SCNT

● Setting modes

Mode No.	Mode
2.0	Vertical movement
2.1	Chuck close start
2.2	Chuck closed, vertically 4.2mm up
2.3	Horizontal movement toward LDP
2.4	Vertical movement and turnover movement to the 13th disc
2.5	Turnover (A→B)
2.6	Vertical movement upward above the LDP
2.7	Clamp down, chuck open start
2.8	Chuck open

● LDP modes

Mode No.	Mode
3.0	Sending PLAY command to the LDP
3.1	Waiting spindle start, checking existence of priority
3.2	Checking existence of chapters, searching for chapter.
3.3	Waiting end of chapter search, sending start request signal to MPU of SCNT
3.4	Setting chapter repeat
3.5	Starting playback
3.6	Releasing audio/video squelch
3.7	Standard playback mode
3.8	CM disc play chapter number detected
3.9	CM disc playback mode, checking playback chapter
3.A	Sending playback end signal to MPU of SCNT, sending stop signal to the LDP
3.B	Sending stop signal to the LDP, sending DATA REQ to MPU of SCNT
3.C	Waiting data from MPU of SCNT
3.D	AV SELECT signal verified
3.E	Chapter end, stop mode set
3.F	Chapter end detected

● Return modes

Mode No.	Mode
4.0	Chuck open
4.1	Chuck open
4.2	Chuck open start
4.3	Vertically 4.2mm down, chuck open start
4.4	Checking existence of disc, horizontal movement toward tray
4.5	Turnover (B→A), movement to the vertical disc address
4.6	Turnover (B→A)
4.7	Vertical movement and turnover (B→A)
4.8	Checking spindle stop, chuck closed, clamp up

● Door modes

Mode No.	Mode
5.0	Vertical movement to the dummy disc address
5.1	Chuck close start
5.2	Chuck close, vertically 4.2mm up
5.3	Horizontal movement toward LDP
5.6	Vertical movement upward above the LDP
5.7	Clamp down
5.8	Door mode
5.F	Door mode (mechanism being initialized)

3.7.2. MANUAL MODE

The manual mode is entered when the power is turned on while pressing S101 and S102 on the MCDR unit.

If S101 and S102 are kept pressed for more than 10 seconds after the power is turned on, the manual mode will be released. In the manual mode, operation of each motor, etc. can be checked.

● Operation

In the manual mode, select the required mode by S101 or S102, and activate operation by S103, S104 and the door switch.

S101	S102	Mode indication	Mode	S103	S104	DOOR SW
			LED test mode	-	-	-
			Vertical movement mode 1	UP	DOWN	STOP
			Horizontal movement mode	Toward LDP	Toward rack	-
			Clamp operation mode	UP	DOWN	-
			Chuck operation mode	Closed	Open	-
			Turnover operation mode	Side A to B	Side B to A	-
			Error histogram monitor mode	Selecting error histogram address	Reading error mode No.	Operation mode No.
			Vertical movement mode 2	UP	DOWN	STOP

● LED test mode ()

When the manual mode is entered, first the LED test mode is activated. In this mode, each segment of the 7-segment LED on the MCDR unit is lit up one by one.

● Vertical movement mode

There are two vertical movement modes,  and .

mode

In this mode, the VH base moves upward or downward while S103 or S104 is kept pressed. Approx. 1 second after the VH base started moving, the speed changes from the lowest to the second. The 7-segment LED indicates the vertical address.

mode

In this mode, the VH base moves upward or downward while S103 or S104 is kept pressed, and when S103 or S104 is released, the VH base stops at the next stop position (where a disc is chucked or removed from the tray). When the door switch is pressed, the VH base stops immediately regardless of the stop position. The 7-segment LED indicates the vertical address.

● Horizontal movement mode

In this mode, the VH base moves toward the LDP or toward the rack at the low speed while S103 or S104 is kept pressed. When the sensor detects stop position, the VH base stops.

● Clamp operation mode

In this mode, the clamp moves upward or downward while S103 or S104 is kept pressed. When the switch detects stop position, the clamp stops.

● Chuck operation mode


In this mode, the chuck opens or closes while S103 or S104 is kept pressed. When the sensor detects stop position, the chuck stops.

● Turnover operation mode

The arm turns over from side A to side B or vice versa while S103 or S104 is kept pressed. When the sensor detects stop position, the arm stops.

● Error histogram monitor mode

In this mode, errors previously occurred can be displayed. The most recent eight errors are shown. First select the error histogram address by S103, then press S104 to display the content of the error. (Refer to page 133 for the error numbers.) When the door switch is pressed, the operation (Refer to page 134 for the operation modes) mode at the moment the error occurred is displayed. If no error occurred, a horizontal bar will be displayed.

S103		S104	DOOR SW
	- 0	The error number of the current one is displayed.	The operation mode at the moment error occurred is displayed.
	- 1	The error number of the one occurred previously by 1 step is displayed.	The operation mode at the moment error occurred is displayed.
	- 2	The error number of the one occurred previously by 2 steps is displayed.	The operation mode at the moment error occurred is displayed.
	- 3	The error number of the one occurred previously by 3 steps is displayed.	The operation mode at the moment error occurred is displayed.
	- 4	The error number of the one occurred previously by 4 steps is displayed.	The operation mode at the moment error occurred is displayed.
	- 5	The error number of the one occurred previously by 5 steps is displayed.	The operation mode at the moment error occurred is displayed.
	- 6	The error number of the one occurred previously by 6 steps is displayed.	The operation mode at the moment error occurred is displayed.
	- 7	The error number of the one occurred previously by 7 steps is displayed.	The operation mode at the moment error occurred is displayed.

4. FOR LJ-V20-K/AEM TYPE

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Contrast of Miscellaneous Parts

The LJ-V20-K/AEM type is the same as the LJ-V20/AEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		LJ-V20/AEM type	LJ-V20-K/AEM type	
	Sign board	DAH1204	DAH1179	
	Return lever sheet A	DAH1207	DAH1183	
	Return lever sheet B	DAH1208	DAH1184	
	Name plate A	DAH1210	DAH1187	
	Name plate B	DAH1211	DAH1188	
	Key sheet	DAH1230	DAH1232	
	Wood frame assembly	Non supply	Non supply	
	Electrical decoration panel	DNK1242	DNK1229	
	Return tray A	DNK1243	DNK1233	
	Operation panel	DNK1246	DNK1230	
	Side panel	DNK1247	DNK1237	
	Key panel assembly	DXA1075	DXA1072	
	Indication plate E/S	DXX1154	DXX1159	

5. FOR LC-V20-K/HEM TYPE

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Contrast of Miscellaneous Parts

The LC-V20-K/HEM type is the same as the LC-V20/HEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		LC-V20/HEM type	LC-V20-K/HEM type	
	Name plate	DAH1214	DAH1176	
	Front glass	DAN1007	DAN1006	
	Side panel L	DMK1026	DMK1022	
	Side panel R	DMK1027	DMK1023	
	Rear panel	DMK1028	DMK1024	
	Top panel	DMK1029	DMK1025	
	Under frame F	DNH1137	DNH1097	
	Under frame R	DNH1138	DNH1098	
	Frame FR	DNH1139	DNH1118	
	Frame FL	DNH1140	DNH1119	
	Frame R	DNH1141	DNH1120	
	Catch	DNK1250	DNK1138	
	Screw cover A	Non supply	Non supply	
	Screw cover B	Non supply	Non supply	
	Hole cap	DNK1251	DNK1223	
	Decoration panel	DNK1252	DNK1225	
	Screw	Z39-009	Z39-003	
	Screw	BBZ40P080FCR	BBZ40P080FZK	

6. SPECIFICATION

LJ-V20-K/LJ-V20 (SELECTION COMMANDER)

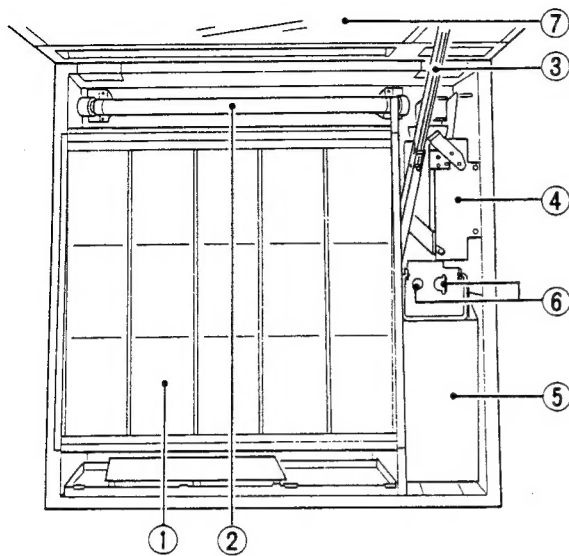
Power requirements	22 VAC, 50 Hz
Power consumption	37 W
Outside dimensions	603 (W) × 605 (H) × 240 (D) mm
Weight	25 kg
Allowable operating temperature	+5°C to +35°C
Allowable operating humidity	5% to 90%
Max. number of selectable music numbers	99 numbers
Accessories	
Rate seal	1 set
ND sheet	2
locking plate	1
Coin sheet	1 set

LC-V20-K/LC-V20 (VIDEO DISC AUTOCHANGER)

Player model	LaserVision video disc player
Applicable discs	Laser juke disc
Power requirements	AC 220V/240V (Switchable), 50 Hz
AC outlet	
SWITCHED	2 (TOTAL 500 W MAX)
Power consumption	246 W
Outside dimensions	642 (W) × 780 (H) × 425 (D) mm
Weight	64.5 kg
Allowable operating temperature	+5°C to 35°C
Allowable operating humidity	5% to 90%
Video output	
Output level	1 Vp-p (when a 75-ohm load is applied, synchronous and negative)
Output terminal	pin jack
Sound output	
Output level	500 mV (100% modulation, 47k-ohm load)
Output terminal	stereo pin jack
Headphone output	
Output level	650 mV (100% modulation, 32-ohm load)
Output terminal	stereo mini-jack
Printer output	8-bit parallel (CENTRONIX-based)
Functions	
Discs	20
Noise reduction	automatic switchover CX on (not switchable)
Advertising play	ON/OFF
Programmed music selection	Max. 99
Best hit selection	Max. 5
Selection count output	Output to printer with Centronics 8-bit parallel interface possible
Selection commander	Up to 3 can be connected
Coin acceptor	MS-111 made by MARS (option) SENTINEL 30/35 made by COIN CONTROL LTD. (option)
Menu display	Max. 150
Coin capacity	Over 2,500 (21.4mm diameter × 1.7mm thickness)
Accessories	
Audio cord	1
Video cord	1
Terminal cover	1
Cord clasper	3
Control cord	1
Operating instructions	1
Key	1

CX is a trade mark of CBS Inc.
This unit meets the CX EXPANDING SPECIFICATION.

7. PANEL FACILITIES



- ① Menu board
- ② Fluorescent lamp for menu illumination
- ③ Arm
- ④ Coin acceptor
- ⑤ Coin box
- ⑥ Key-fixing holes for the coin box
- ⑦ Door

(Operation unit)

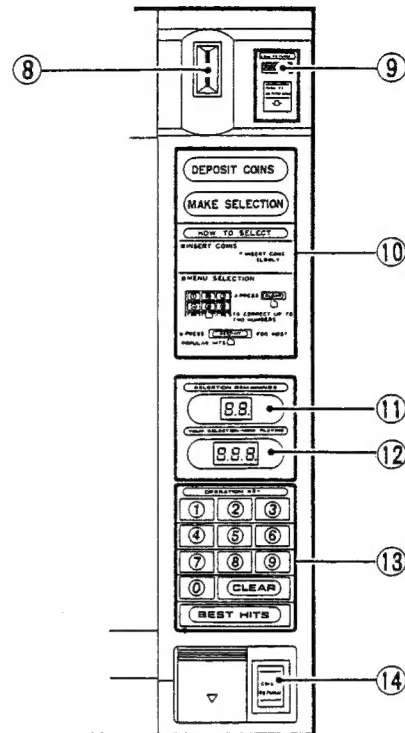
- ⑧ Coin insertion hole

Caution

Inserted coins will not be returned even though the coin-return lever is operated. Insert only the amount of coins needed.

- ⑨ Coin-return lever

Operate the coin-return lever when a deformed or steel imitation coin is caught. This will cause the coin to return via the coin-return hole.



- ⑩ Operation guide display

• DEPOSIT COINS.

When this indication is lit up, you can insert coins. When it is off, inserted coins are returned via the coin-return hole.

• MAKE SELECTION.

This indication is lit up when the system is ready for music selection.

- ⑪ SELECTION REMAININGS.

This indication shows the number of pieces of music you can select using the inserted coins.

- ⑫ YOUR SELECTION/NOW PLAYING

This indication shows the number of the piece of music entering by using numeric keys.

When no key input is being done, this indication shows the number of the piece of music currently being played.

- ⑬ OPERATION KEY

• Numeric keys

Use these keys to enter the number of the piece of music to be played.

• CLEAR key

The selection can be canceled by pressing the CLEAR key before entering the last digit.

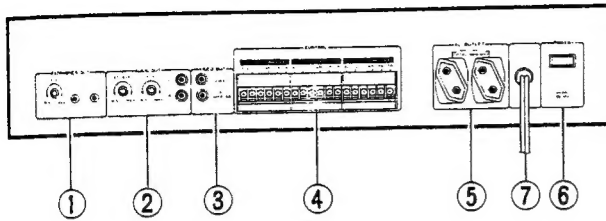
• BEST HIT key

The most-popular piece of music on the location is automatically selected.

- ⑭ Coin-return hole

When a coin is inserted while the indication "DEPOSIT COINS" is off or unacceptable kinds of coins are inserted, they are returned via this hole.

(REAR PANEL)



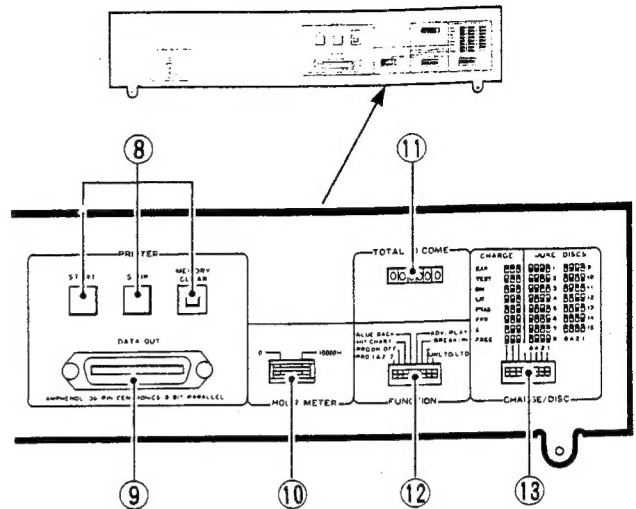
- ① **HEADPHONES OUT (mini jack) and LEVEL control**
- ② **AUDIO OUT (pin jacks), juke level control, and advertising play level control**
These jacks connect to the input jacks of a stereo amplifier using the audio cord supplied with this system. Use the LEVEL and AD LEVEL controls to adjust the audio level for playing juke and advertising discs.
- ③ **VIDEO OUT (pin jack)**
 - VIDEO OUT 1 — Juke play only. (juke)
 - VIDEO OUT 2 — Juke play and advertising play. (juke/advertising)
- ④ **CONTROL (SELECTION COMMANDER 1, 2, 3)**
Connects to a maximum of three selection commanders.
- ⑤ **AC OUTLETS SWITCHED TOTAL 500W MAX**
Power supplied through this outlet is turned on and off by this equipment's POWER switch. Total electrical power consumption of connected equipment should not exceed 500W.

NOTE :

Do not connect appliances with high power consumption such as heaters, irons, or television sets to the AC OUTLETS, in order to avoid overheating or fire risk.
This can cause this equipment to malfunction.

- ⑥ **Power switch (ON, OFF)**
- ⑦ **Power cord**

(FRONT PANEL)



- ⑧ **Printer output control button**
 - START — Outputs stored data via a printer.
 - STOP — Stops printout.
 - MEMORY CLEAR — Deletes the contents of the memory unit for the number of selections and income data.
- ⑨ **DATA OUT terminal**
Use the AMPHENOL 36-pin, CENTRONIX-based, 8-bit parallel printer to print out the number of music selections by discs or that by music pieces and income data.
- ⑩ **HOUR METER (0 to 10,000 hours)**
Displays the duration of electricity applied to the video disc autochanger.
- ⑪ **Income counter**
Displays the amount of coins deposited.
(This income counter cannot be reset.)
- ⑫ **FUNCTION switches**
- ⑬ **CHARGE/DISC switches**